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JOURNAL

OF

THE ASIATIC SOCIETY.

No. 38.—February, 1835.

I.—*Some Account of a Sect of Hindu Schismatics in Western India, calling themselves Rámsanèhí, or Friends of God. By Capt. G. E. WESTMACOTT, Asst. to the Gov. Gen's Agent, N. E. Frontier.*

OF THE MAHANT OR RELIGIOUS SUPERIORS OF THE ORDER.

RÁMCHARAN, the founder of the Rámsanèhís, was a Rámávat Byrá-gí, born A. D. 1719*, at Sorahchasen, a village in the principality of Jypur. The precise period, nor the causes, which led him to abjure the religion of his fathers, do not appear: but he steadily denounced idol-worship, and suffered on this account great persecution from the Brahmans. On quitting the place of his nativity in 1750, he wandered over the country, and eventually repaired to Bhílwára, in the Udípur territory, where after a residence of two years, Bhím Singh, prince of that state, and father of the present Rána, was urged by the priests to harass him to a degree which compelled him to abandon the town.

The then chief of Sháh-pura, who also bore the name of Bhím Singh, compassionating his misfortunes, offered the wanderer an asylum at his court, and prepared a suitable escort to attend him: the sage, while he availed himself of the courtesy, humbly excused himself from accepting the elephants and equipage sent for his conveyance, and arrived at Sháh-pura on foot, in the year 1767; but he does not seem to have settled there permanently until two years later, from which time, it may be proper to date the institution of the sect. Rám-charan expired in the month of April, 1798, in the seventy-ninth year of his age, and his corpse was reduced to ashes in the great temple at Sháh-pura.

* A. Samvat 1776.

Sadha Rám, Governor of Bhílwára, a Bania of the Deopura tribe, was one of Rámcharan's bitterest enemies: he on one occasion dispatched a Singí* to Sháh-pura to put the schismatic to death; but the latter, who probably got information of his purpose, bent his head low as the man entered, and told him to perform the service on which he was deputed, but to remember that as the Almighty alone bestowed life, man could not destroy it, without the Divine permission. The hired assassin trembled at what he took for preternatural foresight in his intended victim, fell at his feet, and asked forgiveness.

Rámcharan composed 36,250 Sahd or hymns, each containing from five to eleven verses: thirty-two letters go to each aslok, which give the above total. He was succeeded in the spiritual directorship by Rám-*jan*, one of his twelve Chèla or disciples. This person was born at the village of Sirsin, embraced the new doctrine in 1768, and died at Sháh-pura in 1809, after a reign of 12 years, 2 months and 6 days. He composed 18,000 Sabd.

The third hierarch, Dulha Rám, became a Rámsanèhí, A. D. 1776, and died in 1824: he wrote ten thousand Sabd, and about four thousand sakí, or epic poems, in praise of men eminent for virtue not only of his own faith, but among Hindus, Muhammedans, and others.

Chatra Dás was converted at the early age of twelve years, ascended the throne† in 1824, and died in 1831. He is said to have written 1000 Sabd, but would not permit their being committed to paper.

Naráyan Dás, the fourth in descent from Rámcharan, now fills the chair of spiritual director.

On the demise of a Mahant, an assembly of the priests and laity is convened at Sháh-pura to elect a successor, who is chosen with reference alone to his wisdom and virtues. He is installed on the thirteenth day after the office falls vacant, on which occasion the By-rágís entertain the entire Hindú population of the town with a banquet of sweetmeats at the temple within the city-walls, known by the name of Rammerí‡.

The only difference between the garb of the Mahant and that of the priests consists in the quality of the cloth, which is made of cotton of

* Singí. A particular cast of Hindus, so called in Rájwára from their conducting a number of their own, and of the Malesrí and Suruogí tribes of Banias, to noted places of pilgrimage, free of all expence. The word is evidently a corruption from Sangí a companion.

† Gaddí is the term invariably applied to the cushion of the superior and Maháráj (mighty prince), the only title by which he is addressed and spoken of by the Rámsanèhís. They approach him with profound obeisance, reverently touch his foot, and lay their foreheads to the marble on which he is seated.

‡ Merí signifies an upper-roomed house in the language of Rájwára.

rather a finer texture than theirs : their diet is the same, and consists of dry cakes of coarse wheat flour without any kind of seasoning. The superior resides at Sháh-pura, the chief place of their religion, but occasionally leaves it for a period of one or two months, wandering over the country to mortify his body and accustom it to endure fatigue.

Religion.

The Rámsanèhís believe in the unity and omnipotence of God, whom they regard as the Author of creation, preservation, and destruction ; nor so far as I could learn, do they hold his nature and attributes to differ materially from the doctrine professed by ourselves. They call the Supreme Being, Rám ; he is the source of all good, and the averter of evil, and as none can fathom his decrees, resignation to them is implicitly enjoined. Man is pronounced incapable of any exertion of himself : whatever comes to pass is accomplished through the Divine Agency ; and as God alone is the bestower of rewards and punishments, the Rámsanèhís are instructed to be constant in his worship, in the morning, at noon and night, and always to ask his blessing before going to meals. The soul is believed to be an emanation from the Divine spirit, which takes flight to heaven on the dissolution of the human frame ; and they inculcate, if a person commit sin, who has enjoyed the advantages of education and is versed in the scriptures, no future act however exemplary can procure his remission from punishment, but in the case of an illiterate man, that he may by study, devotion and repentance obtain absolution of his crimes.

The formation and worship of idols is expressly prohibited. The Rámsanèhís pass the Hindu gods unnoticed, and no sort of images or symbols of idolatry are admitted into their temples. When I pointedly asked Náráyan Dás his opinion of idol-worship, he replied in verse :—‘ As to lave the body in the ocean is equivalent to bathing in all the rivers of earth, since they flow into the great deep ; and to irrigate the roots of a tree is sufficient without further waste to nourish and bring forth its leaves, its flowers, and its fruits ; so to worship the omnipotent God, does away the necessity of addressing all inferior deities.’

The Mahant said it was a mistake to suppose the doctrine of the sect was new—it had in fact existed in the world from a very remote period, though shorn of its purity by admixture with debasing superstitions and false tenets, engrafted upon it from time to time by the ignorant and designing. Men were born in every age who held sound principles of belief, but persecution compelled them to recant their opinions, or to take refuge in the wilds. It was reserved for

Rámcharan to frame a code from the most approved writings of Hindu law-givers : to avoid giving a shock to the prejudices of the people he desired to convert, he wisely took the Shástras for his guide, culling that which was good, and rejecting all that he deemed mischievous—and he called those who adopted his opinions Rámsanèhí, friends or servants of God.

The Mahant readily engaged to furnish me with a complete collection of their sacred writings ; but as there was but one copy in the temple, I succeeded in bringing away with me only a few selections, of which I subjoin a translation. The head of each page is inscribed with the holy name of Rám, used by the society as an initial title of respect, corresponding with the Alif (Allah) of the Musalmans, and Srí of the Hindús, and signifying, that an author solicits the blessing of God on commencing a work, and invokes success on the undertaking.

The Mahant wrote the first Sabd in an elegant hand, the rest were transcribed by the priests in a corresponding style of beauty, and red ink-marks are introduced in the commencement and end of each couplet. The religious works of the Rámsanèhís are written in the Deva Nágari character, and chiefly in the Hindí language, with an admixture of Rájwára provincialisms—but there are also a great many Sanskrit and some Panjabí verses, and Arabic and Persian words likewise find a place.

Of the Priests.

Priests are called either Byrágí or Sádih, and are divided into three classes, the two last of which, denominated Bedehí and Mohaní, I shall notice presently. They are enjoined to study the holy writings, and to disclaim all merit in their works : to observe celibacy, chastity, humility, abstinence, and contentment : to put a restraint upon the tongue : to sleep little : to accustom the body to hardships and fatigue : and to exercise charity, liberality, and mercy. Anger, brawls, avarice, selfishness, usury, gaming, lying, theft, lust, hypocrisy, and all kinds of luxuries are strongly denounced.

Priests are commanded never to look at their face in a glass, nor to use snuff, perfumes, or ornaments, as such things savour of vanity. To go bare-footed, and on no account to ride on any kind of conveyance : never to destroy any thing animate, nor to live in solitude, nor to ask or receive money. Dancing, music, and other frivolous amusements are forbidden, and to taste of tobacco, opium, and all intoxicating drugs and spirits.

They are not permitted to prepare medicines, but do not object to receive them in time of sickness at the hand of a stranger.

It may be right to mention in this place, that many of the reasons given for the institution of particular rites were received from the chief of the Rámsanèhís, to whom I made three visits: he usually delivered himself in Sanskrit verse, which he afterwards explained in the local dialect, for the instruction of his hearers.

It was a maxim of Rámcharan that woman and gold in the present vicious state of society were the principal sources of mischief in the world, he therefore enacted a strict ordinance for priests to shun both of them. The founder, a married man without a family, set the example of putting away his wife; and this sacrifice, with the desertion of one's children, are essential to obtain admission to the order: but the families of these Byrágís are, I believe, in all cases comfortably provided for. So strictly is the rule of continence enforced, that a priest is only permitted to converse with females on matters connected with religion; the smallest approach to levity would involve the dismissal of the culprit. Dulha Rám, the third Hierarch, was affianced at the time he became a Rámsanèhí, and of course broke troth and cast away the kangna or thread bound round a bridegroom's wrist; hence his name Dulha or the Bridegroom. A Turan*, representing a bunch of flowers in stone, is suspended under the porchway of his shrine at Sháh-pura, in commemoration of the circumstance.

Gold is supposed to beget avarice, and to accept of it destroys the integrity of all previous acts of piety and virtue. I combatted its interdiction on the plea that the misuse, as of every thing else, was to be guarded against, but that it was capable of working much good—and inquired if women were thought so ill of, why the sect admitted female converts. “The touch of gold,” said Náráyan Dás, “is a lure to sin, and marriage is prohibited to ecclesiastics (not to the laity), because the cares of a family would interfere materially with their holy meditations. The heart should be fixed on one alone (God), he who places his affections on any thing mortal, ceases to be a Byrágí.” It is related, in example of the little value set on lucre by the Rám-sanèhís, that a man presented Dulha Rám on some occasion with a philosopher's stone, which the sage received in silence and cast into a well. The author of the gift, indignant at the contempt shown to his offering, preferred a complaint to the Rája of Sháh-pura, who asked the superior the motive of his conduct. The man having acknowledged he bestowed away the stone, the Mahant inquired how he could

* It is usual among Ráj-púts of all ranks, at the time of a wedding, for the father of the bride to suspend a bunch of flowers made of silk or wood, called turan, at his porchway, which the bridegroom strikes with the handle of a whip or stick before he enters to bear away the bride.

in reason complain of the loss of what did not belong to him.—“Your motive,” said Dulha Rám, “in presenting the stone was to tempt me to evil; but I covet not gold, nor is the transmutation of metals fitting employment for a mendicant: take ye twenty rupees and begone.”

A Byrágí, convicted of receiving money, is branded on the forehead with a metal coin, heated for the purpose, and ejected from the community. Yet this interdiction, however strict, must be regarded as nominal, since lay followers receive money for the use of the order—and two Banias of the sect residing in Sháh-pura are appointed expressly to receive remittances, lend out money, and carry on trade on account of the holy fraternity.

A woman may become a priestess, as in the instance of Sarúp, a devoted adherent of Rámcharan, by abandoning her husband and offspring, and by conforming strictly to chastity and other statutes. Females are forbidden under pain of chastisement and excommunication, to approach places of worship after dusk, as they form the residence of the priesthood: it is considered prudent to guard them from temptation, although they are supposed to have acquired absolute controul over the passions and all unlawful desires, before they are admitted to the sect. The sexes sit apart in the temples, and never sing together.

In regard of the injunction to sleep little, and to follow habits of industry, they say there is enough of sleep in the grave, life is evanescent, and of too much value to be passed in repose; and by wasting the precious hours in slumber, man degrades himself to an equality with the brute. Their aliment is poor, and taken sparingly, because abstinence induces watchfulness, while a surfeit of food and sleep make the soul heavy. Priests reside away from the habitations of man, as the turmoil of cities would interrupt their meditations; but they are at the same time commanded to live together, to correct the foibles and relieve the gloom of each other. “A solitary lamp,” added the chief, “however brilliant, casteth a shadow beneath it—place another lamp in the apartment, and the darkness of both is dissipated.”

The priest changes his name on admission to the order, to denote he enters on a new state of life, and the hair of his face and head (with exception to a small tuft on the crown) is shaved close; there are several barbers on the establishment, whose business it is to perform this office; they are wealthy, and receive occasionally valuable presents. I heard of a Charan, who, in a fit of liberality, presented five hundred rupees to one of them. The only covering worn by the Sádhs is a cotton cloth, of coarse texture, seven feet and a half long, with a small piece for a waistband, and another for a percolater, water being always strained before it is used for culinary or other purposes, to guard

against the destruction of animalculæ. The sheet is coloured with Gírú, a kind of red-ochre, emblematical of humility ; they add a second in the winter season, and sometimes a third, when if warmth be not obtained, they throw off all clothing, to mortify feeling, disdaining, as they express it, to be overcome by the wintry elements. This sheet is brought over the head, and forms its only covering ; but woollen cloth of similar dimensions is sometimes substituted for cotton in the cold months. They all go bare-footed, and never ride on any description of animal or wheeled conveyance.

A perpendicular mark of white clay, called Sirí, imprinted on the forehead, is a distinguishing symbol of the sect, denoting belief in the unity of God, and they have a rosary of small beads used in prayer about their necks. Metal utensils are proscribed. The Sádhs drink from wooden goblets, and eat off stone, china, and earthen-ware ; the latter, it is well known, are forbidden to orthodox Hindus. They abstain from animal food, and what is singular, considering the extraordinary anxiety shewn to provide for the safety of insects, partake of nothing unsubdued by fire, fruits and vegetables not excepted. They have no objection to touch the element, but refrain from preparing their own food : thus it should seem, however fearful themselves, to incur the deadly sin of robbing a creature of life, they do not view the act in others with the same antipathy. Even the most loathsome vermin are held sacred ; whenever a Rámsanèhí kindles a light, he covers it with a shade, and lamps are excluded from the temples from an apprehension they may lure insects to destruction. Influenced by a similar feeling, the priests look on the ground before they walk, and never move out of doors, except on very urgent business, during four months of the year, or from the middle of Asarh* to the middle of Kartik. The insect population being most active in the wet months, they fear to crush them under foot in passing through the rank vegetation, and should they be on a journey, halt without reference to situation, till the season is over.

The total number of Sádhs, so far as I could ascertain from inquiry in various quarters, does not exceed eight hundred. No census has ever been taken : they are dispersed over the country frequently at a great distance from Sháh-pura, and never attend the festival of Phúl Dol together, so it is obviously impossible to arrive at a correct estimate. The number at Sháh-pura constantly varies, and about a hundred are sometimes met with in the temple at one time ; the visitors who come to make their respects to the superior, to consult him and receive his blessing, usually remain for three days, and give place to others.

* July, August, September, and October.

The priests may be considered wealthy, their few wants considered, and the laity subscribe liberally to their support. Two of them visit the town of Sháh-pura daily, to collect ready-dressed victuals from lay members of the community and Hindus of the better class, who contribute readily to fill their wallets. They do not accept food from other sects, and the custom is observed, it should seem, as an act of humility, certainly not from an avaricious motive. The fraternity make their evening repast off these offerings, and purchase materials for a simple breakfast, the only other meal, out of their own coffers.

Rámcharan had twelve pupils or disciples, called Chèla, whom he selected from the priesthood, filling up vacancies as they occurred, from the most virtuous of the elders, and this custom is continued by his successors. They are called the "Baruh Thumbe ke Sadh," or disciples of the twelve pillars. The middle hall of the temple where the Mahant sits, and prayers are read, being supported by that number of columns, three on a side, beneath which the disciples range themselves. The openings between the columns are hung with cotton cloths, dyed with Gíru, let down at night to exclude the air, and here the priests take their repose; the pavement of the hall is elevated above the outer terrace, and is the only part of the structure laid with mats, and dry grass is spread upon the terrace in the winter, the only time of year such a luxury is permitted, to serve as a cushion to the laity and visitors who are not admitted inside.

The twelve do not reside permanently at Sháh-pura, but four or five are always found there at one time. One of them denominated Kotwal acts as steward of the grain and medicines deposited in the temple, and distributes a daily allowance of food to the inmates; nothing can be taken from the store without the Mahant's order; it is also the duty of the Kotwal to summon the priests to midnight prayer.

Another of the body called Kapradár—keeper of the wardrobe—has charge of various kinds of clothes presented by the laity and strangers for the use of the brotherhood: these include coarse cottons, blankets, and other woollens, but no coloured or rich stuffs are accepted. The cloths supply the Sádhs with raiment, and when cast off, are bestowed in charity; and some of the brotherhood are constantly employed preparing dresses for the poor. The same individual keeps the vessels of the refectory.

A third fills the office of censor, and maintains strict watch over the manners and moral conduct of the fraternity. A fourth teaches the priesthood to read, and a fifth instructs them in writing.

Another is appointed to teach reading and writing to men of all persuasions who apply to him, while a seventh, usually selected for his

age and saturnine temper, instructs females in the same acquirements.

The remaining five, with three disciples chosen indifferently from among those mentioned above, form a council of eight, appointed by the Mahant, to investigate into offences and infringements of the rules of the order. The elder ecclesiastics have usually several disciples, who are byrágís, and in event of the absence of a member filling an office in the establishment at Sháh-pura, a trust-worthy follower officiates as his deputy.

Of the Priests called Bedehí and Móhaní.

Bedehí, compounded of two words *be*, without, and *deh*, body, implies that the persons so denominated are dead to all corporeal feeling, and accordingly they go stark naked.

The Mohaní, as the term indicates, feign insensibility and unconsciousness of all that passes around them. Priests who have not sufficient command over their tongues become "Mohaní," not for life, but a period of years; and when they have brought their hasty tempers into complete subjection, they resume the use of speech. They repeat "Rám, Rám," the watch-word of the sect, in acknowledgment of a salutation, and permit themselves to converse and answer questions on subjects strictly confined to their religion. With exception to the particulars noted, the Bedehí and Mohaní differ in no respect from the other priests.

The hungry, be their creed what it may, are never sent away empty from the temple, and the ragged are provided with suitable raiment. During Chyt, Bysakh, and Jeth, or from the middle of March to the middle of June, the hottest period of the year, the mahant stations a brahman*, with water-carriers at a distance of two miles from Sháh-pura, on the different roads leading to the city, to minister to the wants of the thirsty traveller. And all the cattle of the town receive a certain allowance of fodder and water during the above season from the same bountiful source.

It will be seen, that the doctrine of the Rámsanèhís inculcates the mortification of the passions, with entire abstraction from the world, and the renunciation of all its pleasures and enjoyments. The two sins held in most abhorrence are incontinence and avarice, and are never forgiven. The dress of the priesthood is kept scrupulously neat and clean, and changed, I believe, every day, or second day, and

* It is barely necessary to mention, that a brahman is chosen, because Hindus of inferior caste, and I might include foreigners, are gratified to accept the beverage from his hand, while they might hesitate to take it from a man of low tribe.

their modest quaker-like demeanour, as they respond “Rám, Rám” to the salutation of the traveller, prepossesses him strongly in their favour.

Of the Laity.

The laity, known by the general name of girlist, are at liberty at any time to enter the hierarchy, and the office of mahant is open to them. They are particularly enjoined to speak the truth; to be constant in their affections, and just and honest in their dealings. I omitted to inquire, if females are forbidden to become Satí, but rather think they are not, as two of the wives of the late Rájá of Sháh-pura, who was a Rámsanèhí, burnt in 1825. It might be that the force of ancient custom was in this case too strong to be overcome, and the noble often indulge licenses which would not be countenanced in the peasant.

The girlist celebrate their weddings with none of the pomp and rejoicing usual with the brahmanical Hindus, but conduct the ceremonial in a quiet unobtrusive manner. Like the byrágís, they are forbidden to mourn for the dead, as an act answering no purpose, since death is the doom of all, and also because it implies a want of resignation to the divine will. They burn their dead, and chaunt Sabd over a corpse.

Neither priests nor laymen observe Tíja, Dashahra, Dewáí, Holí, nor any other Hindu festival, that I am aware of; they keep a strict fast from sun-set until sun-rise, nor even when sick, are they permitted to take any nourishment, but medicine during those hours.

The laity at Sháh-pura are in number about two hundred, of which perhaps a hundred and twenty are of the male sex, and they are interdicted turning Bedehí and Mohaní, as attention to the rules of those orders are incompatible with the discharge of temporal duties.

Converts.

The Rámsanèhís are composed of all castes of Hindus, and although no members of other sects have been converted, nor so far as I could learn, have any applied for admission to the order, the tenets are characterised by so much of liberality that I see nothing to oppose it. Both Christians and Muhammadans are freely admitted to their places of worship; all that is required of them, being to remove their shoes: but in the matter of diet, the force of prejudice and ancient custom are so strong among the sectaries, that I doubt if they would allow apostates of any other faith to eat with them.

Converts can be admitted to the society by the superior alone in the temple at Sháh-pura, and they are conducted for this purpose by the priests from different parts of India. The superior makes the novice over on his arrival to the twelve Sádhs of the pillars, who are

directed to examine him on the soundness of his belief, and to make him thoroughly conversant with the tenets on which their religion is founded. Should their report be favourable, the name of the convert is changed, supposing he enter the hierarchy, but not otherwise, and he is received into the order, after undergoing a novitiate of forty days.

Some brahmans have enrolled themselves, but converts have been made principally from the mahèsrí* and agarval tribes of baneas. There are no certain accounts of the number of Rámsanèhís dispersed over Western India; they abound chiefly in Rajwára and Gujarát, are met with in the neighbourhood of most large cities and towns, such as Bombay, Surat, Hydrabad, Punah, and Ahmedabad, and there are some at Benáres.

When we consider the strict rules by which the ecclesiastics are bound, and the hardships by which they are expected to subdue the body, it is not surprising their number should augment but slowly; but the superior assured me, they had much increased of late years through the quiet which Western India enjoys under British protection.

Worship.

Worship is performed three times a day, but the laity, busied in their worldly avocations, do not all go at one hour, though once seated, they remain in the temple till the service is over. The book of prayer is always read aloud by a layman, who makes a pause at the end of every second or third verse, to enable the mahant, and in other tabernacles, a priest of superior acumen, to expound and comment on the texts in the dialect of the country. Not more than six or seven Sabd are read in a day, and continued concordant to order, until the whole have been explained to the congregation; thus two years are frequently occupied in going through the sacred writings.

The Sádhi rise at midnight, and continue at their devotions until the first watch of the morning (8 A. M.), when the laity attend for a couple of hours, and the service concludes with a couple of Sabd or songs of praise chaunted by females. Mid-day prayer commences at one or two P. M., and lasts for several hours; and evening service, at which only men are present, begins at dusk, and terminates in an hour, during which time, two arthí or hymns, are sung. As observed in another place, men and women never sing together, and they sit apart in the temples; and when the priests are alone, they pass hours together in silent abstraction, and at other times, count their beads, repeating at intervals the holy name of Rám.

* Mahèsrí from Mahèsvar, a name of Mahádèva: both tribes worship the god under different energies.

Festival of Phúl Dol.

Annually in the month Phálgún*, a festival called Phúl-dol, is observed at Sháh-pura, attended by as many of the priests and laity as are within reasonable distance: the Sádhs rarely allow two seasons to pass in succession without attending. The five or six last days in Phálgún are, strictly speaking, the festival, but people begin to assemble upwards of a month earlier from distant parts of India.

The name of the festival, signifying "Flowers swinging" is borrowed I understand from one of the eighteen Puráns called Srímáth Blágavat, which contains an account of Krishna, and is intended more particularly for the instruction of his followers. A festival is annually observed in Bengal, and probably in other parts of Hindustan, by the worshippers of the god on the full moon of Chyt or Bysakh, when he is encircled with wreaths of flowers, placed in a sort of cradle, and swung by his votaries. I obtained no satisfactory reason why the Rámsanèhís, who do not observe the rite alluded to, should give the name of Phúl-dol to their great annual meeting.

Two or three Sádhs reside in every village of consideration, and from eight to twelve, and upwards, in each city and large town, according to its populousness: they are always relieved at the Phúl-dol, a regulation framed by DULHA RÁM, the third mahant, to prevent their forming friendships and improper connections with the inhabitants: on no account are they permitted to remain for two successive years at one place.

Each of the princes of Udípur, Jodhpur, Jypur, Kotah, Búndí and of some of the smaller Rajput states, although orthodox Hindus, to evince their respect for the Rámsanèhís, send from eight to twelve hundred rupees to Sháh-pura on the anniversary of Phúl-dol, to furnish forth a day's entertainment of sweetmeats to the sect.

Besides the Rám-dwára or temple outside Sháh-pura, there is another religious edifice within the city wall, called Rám-merí, which has an establishment of five brahman cooks, five females to grind meal, and a similar number of water-carriers for the service of the brotherhood. Hither the high priest resorts with a few of the most pious of the Sádhs, on the last day of each month, to keep a solemn vigil during the night, in commemoration of the death of RÁMCHARAN. Prayers are offered up, and the holy writings expounded, and respectable people of all persuasions are admitted to the building. The priests distribute sweetmeats and food collected in the town to the congregation, reserving their own share till morning.

* February, March.

Punishment.

When any member of the community infringes a rule, he is brought to Sháh-pura, at the festival of Phúl-dol, by some one of the byrágís, who, as already mentioned, are dispersed over the country to watch the conduct of the sect. He is not permitted to eat with the brotherhood, nor to enter the holy edifice; but seated at a little distance off under a certain tamarind tree, where his food is sent to him on a platter of dhák* leaves. The offence with which he is charged is investigated by the council of eight, who make a report on it to the high priest. If found guilty, the culprit is deprived of his rosary, a barber of the establishment shaves the top-knot off his head, and he is ejected from the community. What is stated above applies to grievous offences. Slight infringements of order are investigated at all seasons; and sometimes when the culprit happens to be a long distance off, the priest stationed at the place takes a deposition of the case, and transmits it to the mahant, when if considered fit, he excommunicates the culprit, without ordering him to Sháh-pura. It will be seen, the superior and council are a check upon each other, and they must coincide in opinion before a sentence can be carried into effect.

Religious Edifices.

Temples of the Rámsanèhís are known under the name of Rámdwára, or the gate of God. Among other places in Rajwára, where they are met with, may be enumerated Jypur, Jodphur, Mertha, Nagor, Udypur, Chittor, Bhíl-wára, Tonk, Búndí, and Kotah. The one at Sháh-pura is by a great deal the handsomest, and distinguished for the richness and magnificence of its architecture: it is built of rock quarried at Katí, a distance of twenty-four miles, and coated with brilliant white chunam, formed of the same stone, reduced to powder and mixed with milk and other ingredients, which adapt it to receive a high polish. The entrance porch faces the east, and is very lofty, with an arched balcony above, and like other parts of the buildings, neatly carved. From the centre of the pile, a handsome pavilion, with open arches, rises far above the other towers; and in a vault beneath, the corpse of the founder of the sect was reduced to ashes. Between the vault and pavilion, there is an equilateral apartment, supported on twelve pillars, connected by scolloped arches: this was the favourite abode of RÁMCHARAN, and here the mahant daily takes his seat, to expound the doctrines of the faith, and the congregation assemble on the terrace without, for morning and evening prayer.

On the south face of the temple, but quite separate from it, stands a range of seven domes, to which you ascend by steps, six of them re-

* *Butea frondosa.*

repose on twelve pillars, and correspond exactly in their proportions: three are built over the ashes of the Spiritual Fathers, who succeeded the founder, and the others cover a similar number of venerated priests of the community. The central or seventh dome has only five columns, and is much smaller than the rest; it marks the spot where the remains of a female named SARU'P, a pious disciple of RÁMCHARAN, were burnt; and the domes, with those of the temple, are painted inside and out in ornaments of vivid colours. The Rám-dwára was built at different periods, when funds were available, and is said to have cost about eighty thousand rupees: it is kept remarkably clean, and presents a unique and handsome appearance, essentially differing in design from all Hindu edifices I have seen. On a level with the vault are apartments for the priests and members of the sect, who resort to Sháh-pura at the festival of Phúl-dol, and here are also the stores of linen and blankets belonging to the fraternity.

Behind the Rám-dwára repose the ashes of the ancient Rájás of Sháh-pura, each in a distinct shrine. BHÍ'M SINGH, grandsire of the reigning chief, was the patron of RÁMCHARAN, and was the first of his family who embraced the new doctrines. The late Rájá died at Udypur in 1825, but his turban was transmitted to Sháh-pura, and with it two of his wives performed Satí.

**Selected Translations from the Religious Writings of the Rámsanèhís.*

1.—The name of RA'MA is the real seed, in which all things are contained: for he is the source of the three qualities (of goodness, passion, and darkness); of the fourteen regions (of Hindu cosmogony); of the twenty-four (incarnations); the three hundred and thirty millions (of Hindu deities); and the three (principal Gods, viz. BRAHMA, VISHNU, and MAHESWARA), who should be adored, and who not? RA'MCHARAN says, the whole universe sprung from that only seed, as leaves shoot forth and fall off in abundance from the same tree.

2.—The person who adores the all-pervading RA'MA, and turns his back upon the other gods; who visits his guru with bare feet, and stretches forth his liberal hand; who has renounced the world, neither uses harsh language nor jokes, and seeks not any pleasure; who giving up all considerations on profit and loss, resigns himself to the will of HARÍ†; who is not addicted to gaming, stealing, avarice, lying, and hypocrisy; who does not taste bhang‡, tobacco, opium,

* I have to acknowledge my obligations to Bábu KA'SI PRASHA'D GHOS of Calcutta, for his courtesy in assisting me with a translation of these papers: he purposely rendered it as literal as possible, and I am not sure if it would not have been better had I left it in that form.

† A name of VISHNU, but employed here and elsewhere along with RA'MA, to express God in an abstracted sense; the frequent mention of these two as objects of worship, is owing to the doctrine of the Rámsanèhís being mixed up with the tenets, and these verses being selections from the books, of other Hindu sects.

‡ An intoxicating potion, prepared from the hemp plant (*Cannabis Sativa*).

akhaz and wine; who drinks water after straining it, and looks before he walks, is the true Rámsanèlí who hath attained his purpose.

3.—RA'MA is the sea of happiness and destroyer of misery—abandon him not, O RA'MCHARAN, but be constant in his worship.

Song in the Pánjábí language.

The faqír who is enamoured of the beauty of the All-Merciful is drowsy throughout the eight prahars*, because he is fully intoxicated with his love. He (or his spirit) has come from an inaccessible region, and entered the corporeal frame, and after having witnessed all the troubles of the world will return to that region. As long as He (or the soul) occupies the serai (*i. e.* mansion of the body), he gives its proper rent (*i. e.* discharges the duties of humanity) and abandoning his desires, resigns himself to the will of his deity. He wanders about at ease, forms no attachments, seeks only his beloved (God), and bestows a portion (of bread or any other thing) upon all who need it. He points out the path to heaven, rescues others from perdition, conforms to the duties of this world with his faith, and is influenced by no private motive. RA'MCHARAN says, that few individuals have followed the example of such a faqír, who gives no thought to the world, but is content with his present condition.

2nd Song in the Panjábí language.

The faqír whose heart is firm (in God) is above all amírs†; for he is a true pírf. Knowing that the body is a hell, he places not his affections on the world, and keeps aloof from it by frequently meditating on the Alif of Allah. Restraining his heart from going astray, he has laid it at the feet of the Almighty, and remembers him at dawn, in the morning, at noon-time, and evening. He absolves himself in the water of faith, and tells the beads of fatwa§. His cave is in the sky (*i. e.* abstraction of mind), where he sits in contemplation. RA'MCHARAN says, that people do not understand the secret motive of such a faqír, which is to obtain the indescribable Being|| in his body, whom he always serves.

4.—The darvèsh is always happy who is free from desire. Either remain at one place, or roam about in the four quarters (of the earth): roam about in the four quarters, and labour for the salvation of your soul. Be awake or asleep, but entertain no selfish motive. Let your hair grow as long as was that of *Sahaka* and others, or shave your head bare: for he who is free from desire is always happy. Practise benevolence, and make your heart as pure and soft as wax, and look down upon your feet. Be patient, speak the truth, and dance without a mistake (*i. e.* discharge your duties properly). Having once placed the hand of your spiritual guide upon your head, never be so shameless as to undress yourself (*i. e.* refrain from all intercourse with women). He has subdued his mind and heart, and taken his seat in perseverance. RA'MCHARAN says, this is the height of devotion, as a person who attains it has cooled (subdued) his Pir (senses), and never covets the society of women. He is not given to intoxication, love, or adultery, but is always engaged in contemplation, and from leading a solitary life, his mind is free from all affection.

* An eighth part of the twenty-four hours.

† A chief or grandee.

‡ A saint, or spiritual father.

§ Divine knowledge.

|| The human soul is believed to be a portion of the Supreme spirit, and consequently worshipped as such.

5.—If having fed yourself through the charity of mankind you sleep at ease, with outstretched limbs, and fail to offer worship to HARÍ, the punishments of Yama* will not be mitigated: do not take thy meals without adoring the lord supporter RA'MA, but abandoning thy habits of idleness, worship him day and night. Abandon thy habits of idleness, and walk not without the fear of God. If you neglect to follow (this advice), you are a hypocrite, and shall be doomed to pass through the eighty-four (transmigrations). As a powerful creditor collects his dues from his weak debtors by severe beating, so shall you be punished if you take your food without adoring RA'MA.

6.—The ignorant person who commits a sin becomes free from it by the acquisition of knowledge, but the man of knowledge, who is guilty of vice, is like a newly varnished pot, from which the dust (should any fall upon it) never goes off. He is like a newly varnished pot from which the dust never goes off, or like a blue stain (upon linen). A sin committed at a holy place of pilgrimage is like a waking dream. As the stupid man who mistakes his way in the day-time can never discover the true path at night, so the person who possessed of knowledge perpetrates a sin can never emancipate himself from it.

7.—He is a real faqír who makes the stone his bed, whose tent is the sky, whose arms are his pillows, and who eats his food from earthen vessels: he is the master of the four quarters, and is not regarded as low. The prince and the peasant fall prostrate at his feet, and he subsists by begging.

8.—You must die one day, whether you live in the city or the wilderness†. Some (*i. e.* the wicked) are taken bound in chains, while others (*i. e.* the good) are summoned (by death). They are sent for who have renounced the world, who have none to weep (for them), and who have always taken the name 'RA'MA.' RA'MCHARAN says, the good abandon their homes, because they know that they must one day perish, whether they inhabit the city or the wilds.

We should mourn over the corpses of the dead, if weeping could restore them to life. If doctors could save mankind, then none of the wealthy would die, but it is not in the power of any to escape death. Enquire of this from place to place, and weigh it thoroughly in your mind. Life and death were created by the Lord, who can do whatsoever he willeth. We should mourn over the corpses of the dead, if they could be restored to life by weeping. You blame RA'MA, and cry:—“ Oh RA'MA, what have you done, who will support my family, and who will superintend my household works? What have you done, Oh RA'MA? you have as it were sunk the vessel in the middle of the stream.” You know not how long you may live, and RA'MCHARAN declares without this knowledge you fall off from HARÍ, because you blame RA'MA, and exclaim, ‘ Oh RA'MA, what have you done?’

‡9.—You may have followers, eloquence, and fame, without using any exertion to obtain them; you cannot therefore fathom the will of RA'MA. I look not for means; every thing comes to pass of its own accord. The will of HARÍ is powerful, who can revert it? Whatever happens is accomplished by RA'MA; for I am incapable of performing any thing, it is the very height of folly.

* The Indian Pluto, and king of Patal or hell.

† Meaning the souls of those persons.

‡ The figures correspond with the number of paragraphs in the MS. selections.

2nd Leaf.

1.—Man clad in scented garments walks forth with conceited strides, but while all in his outward appearance is fair, his inside is corrupt. He views his features in the glass, and is puffed up with pride; but is ignorant, that his body will suffer dissolution at last, and that not even the fair skin (which now) covers the filthiness within him, will remain.

2.—Woman and the objects (met with in this world) persuade the heart to terrestrial enjoyments, and often level the most exalted mind; such is their nature, therefore abandon them, Oh RA'MCHARAN! You can obtain nothing, Oh RA'MCHARAN, in this world without money, but to an ascetic money is nothing. To an ascetic money is as worthless as a kowri shell; it destroys devotion, knowledge, and ascetism; it ruins devotion, knowledge, and ascetism; for it increases the appetites and eats up (*i. e.* destroys) the integrity of those three qualities. Like achavan*, it absorbs every virtue; wherefore an ascetic sets no value upon money.

3.—The body is the shrine of which the all-perfect RA'MA is the god; the anxiety (to see him) is the art†, and to remember him is true devotion. No worship is better than the constant remembrance of him, and no offering is more proper than resignation. Leave your heart's individuality (or pride), and God will listen to your adoration. He is quite content, Oh RA'MCHARAN, who has understood this secret truth, that the body is the shrine of which the all-perfect RA'MA is the god. Destroying your works (*i. e.* abandoning the merit of them hereafter), enjoy the sweets of humility, contentment, charity, and peace. Speak the truth, curb your inclination and your tongue, repeat the name (RA'MA) inwardly, and acquire divine knowledge. Give up your desires, sit down contented, retire to the woods, and immerse yourself in the pleasant ocean (of contemplation). The faqir who has drunk of the love (of God) constantly meditates on him, his aspirations and respirations are not in vain; for whether awake or asleep, he never forgets his God. He is merciful, subdues his anger, and neither indulges in avarice or delusion: he worships none but RA'MA, and cares not if the remaining three hundred and thirty millions of gods are displeased with him.

4.—The ascetic is always awake, and meditates himself, and makes others meditate (on God). Whenever slumber comes upon him, he sings a hymn—whenever he lights a lamp, he thinks of the safety of animals, and covers it either with abhra or cloth; by this means, the followers (of this doctrine) never incur guilt, but attain virtue. CHÍTAN says, that many have obtained salvation by avoiding desire, and disclaiming all merit in their works.

5.—What will you achieve in lying, oh KABÍR?—lying will bring on sleep while death is near the pillow, like the bridegroom at the turan. What will you achieve in sleeping, oh KABÍR?—awake and meditate upon Marání‡, for you must sleep one day with your long legs outstretched. What will you accomplish in sleeping, oh KABÍR; strive to keep yourself awake, for this life is as valuable as a diamond or ruby, and should be given up to (meditation on) the Lord. What

* The ceremony of sipping water before eating.

† The ceremony of turning a light about the face of an idol.

‡ A name of Krishna.

will you accomplish in lying, oh KABÍR? Arise and sorrow for nothing—how can he whose abode is in the grave (*i. e.* who reflects on the evanescence of this life)—(how can he) sleep in quiet?

6.—By adoring RA'MA, the state of Brahm is attained; this has been fully proved by his votaries. Let, therefore, all the RÁmsanèhís meet together, and raise a hallelujah to RA'MA.

7.—Should the devotee go forth in the autumn, and trampling upon the numerous animals which are born at that season, occasion their death, he forfeits his innocence, inasmuch as he destroys the feelings of his heart, and thereby commits sin at every instant. TULSI says, this is not devotion either in mind, deed, or speech, but the devotee who is careful to remain quietly at home observes the rules of virtue.

(These verses are dated Tuesday, the 6th day of *Chait*, in the *Samvat* year 1855 (A. D. 1798), the year of RÁMCHARAN'S decease.)

II.—*Journal of a Tour through the Island of Rambree, with a Geological Sketch of the Country, and Brief Account of the Customs, &c. of its Inhabitants.* By Lieut. WM. FOLEY. With a map, Plate iv.

(Continued from page 39.)

January 15th.—It had been my intention to cross over *Jeeka*, and proceed from thence towards the town of *Rambree*, through the *Northern Hong**. My host of *Oogah*, and the guides he had furnished me with, were, however, so fearful of accident, and unwilling that I should incur any risk by passing over this wild and almost inaccessible part of the island, that I abandoned the design, and consented to be taken along the sea-shore to the south-west of the mountain, with the view of putting up at *Singhunnéthe*, a village in the *Southern Hong*. I afterwards discovered that had the day been any other than what it was, (Wednesday,) I might have succeeded in inducing the guides to take me over Mount *Jeeka*. The *Mugh*s pay a superstitious deference to what are termed the fortunate and unlucky days for any undertaking. Wednesday (*Boduh-hoo*), happened to be among the latter number. *Pya-tho* (January), is held to be a very unfavourable season for building a house, and marriages are never celebrated in the months† *Wajho*, *Wagoung*, *Todelin* and *Tsadinkyot*. I left *Oogah* by the sea-beach, and passing a few sandstone rocks, with an island resembling the *knot* in appearance and structure, found myself at the foot of *Jeeka*. Its elevation above the sea is probably as much as 3000 feet; the very abrupt manner in which it rises above the range with which it is connected, gives it, at a dis-

* *Hong* is one of the circles in the island; there are two *Hongs*, (*North* and *South*.)

† July, August, September and October.

tance, the aspect of an isolated hill. A dense forest, with little variety of shade, covers the mountain from top to bottom. The ground on the summit is said to be level and clear, but it remains uncultivated, as no *Mugh* will fix his habitation in a spot which not only abounds with wild beasts*, but is, in his opinion, the abode of fairies, and evil spirits, equally destructive with the former. I observed the prints of elephants' and tigers' feet in several places on the road, and from the diminutive size of some of the prints, it was evident that these animals had been accompanied by their young. The guides remarked that a herd of elephants may frequently be seen during the evening feeding upon the long grass and underwood at the foot of the mountain. By their account, the elephants were particularly troublesome in the months of *October* and *November*, (when the rice crops are becoming ripe,) at which time they descend into the plains and do a great deal of mischief. Although elephants are continually shot in the Sandoway district for their teeth, no attempt has yet been made to catch or destroy the elephants on Mount *Jeeka* and its neighbourhood, from the absurd opinion entertained by the inhabitants, that they are not only invulnerable, but are endowed with such superior sagacity as to render all endeavours to ensnare them futile.

I had hoped to find in *Jeeka* some departure from what had hitherto been the prevailing character of the formations on this side of the island. The almost impervious nature of the jungle at the base of the mountain, and the great danger that I should have incurred in endeavouring to ascend the hill on a quarter hitherto undisturbed by man, obliged me to confine my observations to the ground over which my path lay, and there I could find no one geological feature distinct from what I had already met with. A brown ferruginous sandstone regularly stratified, with an inclination to the south-west, was the only rock visible on the surface; whether the sandstone appears on the summit of the mountain, or is succeeded by some other rock, I was unable to ascertain; but so anxious am I to satisfy myself on this point, and to view the *Fairy Land* above, that I shall take an early opportunity of renewing my visit to *Jeeka*. At a little distance beyond the mountain, and at the foot of a small range bounded by the sea, stratification of the sandstone is beautifully distinct. The several layers rise from under each other for a considerable extent; exhibiting a similarity of appearance with the sandstone that covers the lignite coal of *Phooringooé*, an island to the east of *Combermere Bay*.

* Among these, are the *elephant*, the *tiger*, and the *bison*; I have in my possession a horn of the last mentioned animal, which measures $1\frac{1}{2}$ feet in circumference. I only wait for an opportunity to present it to the Society.

Turning to the eastward over a few small hills intersected by ravines and covered with jungle, the road leads to *Rambreengheh**, *Kyout-nemo* and *Singhunnethe*. I observed some very beautiful creepers as I passed over these hills. The leaves, which were very small and delicate, were of a pink colour, and at a distance had the appearance of clusters of lilac blossoms. Of the animal tribe I saw nothing deserving of notice, save a solitary *Ghi* and a flying squirrel; (termed *Tshen* by the *Mugh*s.) It is a very handsome creature, and larger than the squirrel of Europe. The head, back, and tail are covered with a rich coat of dark-brown fur; the under part of the chin, neck, belly and legs being of a bright yellow colour. The skin about the sides and forelegs is loose, and capable of being so much extended, that in making its prodigious spring from tree to tree it appears rather to fly than leap. It is said to be very destructive to gardens; if taken young it may be rendered perfectly tame.

Entering upon the plain, the village of *Rambreengheh*, with its surrounding hills covered with gardens of plantain trees, meets the traveller's view. A few well built *Kioums* are seen resting upon the side of these hills, which are, in some instances, crowned with glittering temples built over the ashes of the departed priests. The village is large and remarkably neat. The soil in its vicinity, a rich yellow clay, taken up with plots of indigo, tobacco, and pepper plants. Bricks manufactured from this clay, and reserved for the erection of temples, were piled up in several places outside the village. Beyond *Rambreengheh*, and to the right of my path, lay the large village of *Kyook-nemo*†, almost concealed from view by the forest of plantain trees with which it is surrounded. *Kyook-nemo* is accessible to the sea by a large creek, and was at one time much infested with dacoits; through the exertions of the magistrate at *Rambree* the reign of terror is now at an end, and the village is apparently in a thriving condition. Approaching the creek, which is at some little distance from *Kyook-nemo*, I was fortunate in finding two *Godoohs* with their small boats at anchor; otherwise as there is no ferry at this place, I must have gone round much out of my way; the merchants kindly consented to take me and my followers over for a small consideration, and the mahouts prepared to swim their elephants across. The shore on the opposite side consisted of a deep clay, which made the progress of the elephants after landing a matter of considerable difficulty. So heavy was the soil, that I was unable to make my way through it unassisted by the boatmen, who in

* *Little Rambree*: it resembles not a little the town of *Rambree*, and thence its name.

† *Red stones*. I saw none of them in my path.

their turn depended for support upon the young mangroves and other marine plants that grew upon it. After some little exertion both elephants and men succeeded in reaching the *Terra Firma* of a stubble field. I here met the *Soogree* of the district, who had in some way been apprized of my arrival, and came out for the purpose of conducting me to the village of *Singhunnethe*. It was at no great distance from the creek, so that I was soon there, and in possession of the house that had been allotted for my accommodation. *Singhunnethe*, as was the case with all the villages that I had seen on the southern side of the island, is surrounded with plantain trees, which not only afford a wholesome and favourite article of food, but are in constant request for the production of a solution of potash* used in the preparation of dyes, more especially in those derived from indigo. The mode in which the potash is obtained from the plantain trees is similar to that followed in other parts of the world in its extraction from the different vegetable substances that produce it, with this exception, that it is held in solution by the water, which is not suffered to evaporate. The stem and branches of the plantain tree are divested of the outer rind, and then broken up into small pieces, which are laid upon the fire and slowly consumed; the ashes are lixiviated with water which is strained off, and reserved for mixture with the dyes. In front of the *Soogree's* house, and in the centre of the village, a nice tank had been dug; the only one I had hitherto met with, tanks being seldom seen except in the neighbourhood of large towns. The houses were neat and built with more attention to comfort and order than is general in the villages of *Rambree*. I remarked a hideous representation of the human countenance drawn with lime upon several of the door-posts. I was told, it is put up to deter the *demon of sickness* from entering the dwelling. Much sickness had been experienced of late, and this was one of the many absurd customs resorted to, with the view of ridding the neighbourhood of its presence. I further learned that when any one of a family has been a long time sick, and recovery appears doubtful, the inmates of the house assemble and make a tremendous noise with drums and gongs, at the same time beating the roof and walls with sticks to expel the evil spirit who is supposed to have taken possession of the dwelling. One door alone is left open for his escape, all the others being closed. While this is going on a *Phoon-*

* During the time that Government held the monopoly of salt in Arracan, the plantain trees frequently afforded to the poor a substitute for the common sea salt. So strictly were the Government rights protected, that a poor woman was actually prosecuted in one of the courts for collecting a little sea salt off a rock on which it had been deposited on the evaporation of the water left by the tide!

gree stands upon the road, opposite to the house, reading a portion of the *Khubbo-wah*, a book that is held in particular veneration. A further ceremony is sometimes observed by the invalid as an additional security for a complete restoration to health ; but it is only performed by those who feel themselves, as it is termed, *possessed*, and called to the exercise of the duty required of them, as a propitiatory sacrifice to the malignant spirit from whose ill will their sickness is supposed to originate. This ceremony, which is called *Náth-Kadéy*, very much reminds me of the antics played by the dancing Dervises of old. A brass dish, or any piece of metal highly burnished, is put up in a frame, and in front of this are laid offerings of fruit, flowers, and sweetmeats. When every thing has been properly arranged, the invalid commences dancing, throwing the body into the most ludicrous attitudes ; and pretending to see the object of worship reflected upon the plate of metal makes still greater exertions, until the limbs are overpowered, and the dancer sinks exhausted upon the ground. Should the sick person be so weak as to render such assistance necessary, he, (or she,) is supported by a friend placed on each side during the whole of the ceremony. It is by no means improbable that this violent exertion has on many occasions proved highly beneficial, realizing the most sanguine expectations of the people. In cases of ague or rheumatism, where a profuse perspiration, and a more general circulation of the blood throughout the human frame is required, there is perhaps no other mode of treatment more likely to produce the desired effect ; and could some proper substitute be found for a piece of metal, the *Náth-Kadéy* might be introduced with advantage into our own hospitals.

Superstition, the companion of ignorance, is a part and parcel of this benighted land. Was I to credit all that is said of ghosts and goblins, it would appear wonderful how this poor people contrived to pass through life unscathed. Every tree or rock that has any singularity of appearance is said to be the nightly residence of some hobgoblin or departed spirit. Yet with all this absurdity, some of the opinions held by the *Mugh*s with regard to a future state of existence are by no means unfavourable to the cultivation of virtuous habits. It is their belief that there are many worlds, and that the earth has been subject to the several and repeated actions of fire and water. (A fact that will not perhaps be disputed by some of the most celebrated geologists of the present day.) The soul, they affirm, may pass through many stages of existence, either in this or another world ; the nature of each change depending upon its moral condition. For instance, a person of virtuous habits may aspire to a state of being far more elevated than that before enjoyed : if on the contrary, he shall have been of a

vicious disposition, his future state will be that of an evil spirit, or some grovelling and pernicious animal, such as a hog, toad, serpent, &c. A gentleman residing at *Rambree* has made me acquainted with a singular instance of the firm belief entertained by the *Mugh*s in the transmigration of souls. A young woman who lives at *Rambree*, in very good circumstances, declares that she is the mother of a man *much older than herself*; this she accounts for by saying, that he was *born to her during a former life*. She has a scar under the left ear produced, as she affirms, by a cut from her husband's *dhao*. She further states that she died of grief, in consequence of the partiality shewn by that cruel husband for his elder wife. This story is not only credited by the neighbours, but its truth is assented to by the individual whom she calls her son. The idea was probably produced, in the first instance, by the circumstance of her having been born with that curious mark under the ear, and afterwards confirmed by a dream or some other cause favouring the publicity of a tale that owes its popularity to a belief in the transmigration of souls.

January 16th.—As the morning was very cold, I did not leave *Singhunneth*e before the sun had well risen, and the fog that hovered round the mountains had been somewhat dispelled. The route at first lay over patches of rice-stubble, and then took a direction across several small ranges of hills, the most elevated of which was covered with a red iron clay similar to that on the "*red hill*" near the town of *Rambree*. From the summit of this hill, I enjoyed a fine prospect of the channel that divides the eastern side of the island from the district of Sandoway. The hills of *Lamoo* and *Kalynedong* rose on the opposite shore, and the distant mountains of *Yoomadong* were faintly visible amidst the clouds that surrounded them. Descending this range I approached the village of *Saain-kyong*, celebrated for its lime. The limestone is found at the foot of a high hill to the left of the road. This was the first limestone that I had seen on *Rambree* Island; and it is so concealed by the jungle, that had I not been previously made aware of its existence and inquired for its site, I should have proceeded on my journey unconscious that such a rock was in my neighbourhood. From its appearance and more particularly from the rocks with which it is associated, I am inclined to class it with the "*upper freshwater limestone*" found in tertiary formations; it is of a greyish white-colour; of a fine compact texture, but very brittle. It occurs in several detached masses of a globular or columnar form, and although I made every possible search along the ravines in its neighbourhood, I could discover nothing that would indicate the slightest approach to a stratification; nor has this species of limestone been discovered in

any other part of the island. There were no appearance of the fossil remains sometimes found in this rock. such as fresh-water shells, &c. The limestone is split into several large fragments by means of fire ; these are again broken into smaller pieces, and the whole conveyed in baskets to the lime-kilns constructed on the banks of the *Saayre-kyong* creek, which at full tide has sufficient depth of water to admit of the approach of large boats. The whole of the lime used in *Rambree* Island, either for architectural purposes, or for the preparation of the edible chunam, is obtained from this rock. I was told that the lime, if taken in large quantities, was sold on the spot for $3\frac{1}{2}$ maunds per rupee, and that there were generally from 100 to 200 maunds collected. Crossing the creek at low water, I observed a few boulders of lias clay and calc spar imbedded in its banks. Proceeding from thence by a neat *Kioui*m and grove of mangoe trees, I arrived at *Seppo-towng*, a village situated at the foot of a high hill covered with forest trees, and diversified with a few spots of ground cleared for the cultivation of the plantain tree. The tall *Girjuns*, with their white trunks divested of branches, were eminently conspicuous amidst their more graceful but probably less serviceable neighbours. The *Girjun* yields the oil that bears its name, and is used for combustion as well as for admixture with paints, varnishes, &c. (See Jour. As. Soc. II. 93.)

These trees are very abundant upon the island, and are farmed by Government. The mode of extracting the oil would appear to be as follows : a deep notch is cut in the trunk of the tree by means of a *dhao* or other instrument, and to this fire is applied until the wood becomes heated, and oil is seen to exude upon the surface. In the course of three or four days perhaps as much as a seer or a seer and a half of oil is collected within the cavity, and the tree will continue to afford a certain quantity of oil for five months or more, the collections being generally made every fifth day. When the oil has ceased to flow the tree is again cut in the same place, so that the whole of the wood which had been consumed or scorched is removed ; fire is once more applied, and the oil collected as before. The notch has after repeated cuttings become so deep as would render any further attack upon the trunk, in this particular spot, destructive to the tree ; in which case the *dhao* is laid upon another part of the trunk, and the same process observed as before mentioned. The tree is said to yield oil at all seasons of the year, precautions being taken during the rains to exclude the water. A large *Girjun* tree has been known to produce oil for 12 successive years, and as others are constantly supplying the place of those destroyed, there is no falling off in the amount of the several years' collections. The oil is sold in *Rambree* at the

rate of two or three maunds per rupee, and the greater part of it bought for exportation.

Outside the village and facing the road was the large and comfortable dwelling of the *Soogree* of *Seppo-towng*.

He was an elder man, of respectable appearance, and bore a good character in his district; inviting me to pass the night under his roof, he set about making arrangements for my reception, and appeared desirous of contributing as much as possible to my comfort. I learned from his followers who were sitting around me in an attitude of careless and indolent attention, that the *Soogree* was a native of *Ava*, and had come to the province when very young. He had since that time enjoyed several situations of emolument, and was a man of much consequence under the Burmah Government. The change of rule had produced a change in his circumstances, and the net amount of percentage* he now realized during the year will not perhaps exceed 400 rupees, probably not one-tenth of what he was accustomed to receive during the period of Burmah sovereignty in Arracan. Every thing around me but too plainly betrayed the existence of this decline of fortune. The stockade that surrounded his compound was gradually giving way under the pressure of age; no new posts supplied the places of those that had fallen in, and his shrubbery and garden forcibly reminded me of that which is said to have once belonged to the "*Man of Ross*." The *Soogree*, said one of his dependents, cannot now afford to maintain that character for hospitality which once belonged to him; he cannot even provide for his most faithful followers, much less give bread to the stranger; he still continues to do so, however, as far as his means will permit, and there are none who approach his door without receiving a welcome to his board. I respected the feeling that induced the expression of these sentiments, and thought more favourably of my host in consequence thereof.

At the time that *Rambree* Island was subject to the Burmah rule, the *Soogrees* were invariably natives of the province; appointed and removed at pleasure by the Burmah *Méyowoon* or other local authority. The *Rooagongs* in like manner owed their nomination or dismissal to the *Soogree*. There appears to have been no regular maintenance authorized for the support of these functionaries, and consequently no limit to their exactions and misappropriation of the public funds. The *Soogrees* were not only entrusted with the collection of the revenue, (derived from demands made at pleasure on those able to comply with them, and which might therefore be viewed in the light of a property

* A *Soogree* receives 15 per cent. on the collections, and a *Rooagong* four per cent.

tax,) but were in some instances permitted to pass decisions in civil suits and also in cases of petty theft and larceny: at a time when corruption was so openly allowed and practised, it may be easily supposed that much gain was derived from this permission, and that little reliance could be placed upon the justice of the decisions, or statements made by these *Soogrees* respecting the gross amount of revenue derived from their several districts. One-fifth of the supposed produce was generally retained for the services of those delegated by authority to convey the royal mandates to the *Méyowoon*, and the remainder was devoured by that officer, the *Mroosoogree*, and others of the local Government. The *Soogrees* and *Rooagongs* of districts having precisely secured to themselves such a share of the spoil as they could safely maintain without incurring the displeasure of the *Méyowoon*; the proceeds of other sources of revenue, especially that derived from the customs, (and which during the Burmah rule was in some instances considerable,) were remitted to the capital as the provision for the Prince Royal, to whose safe and auspicious keeping the Island of *Rambree* had been consigned.

In the evening I took a walk towards the *Kioum*, and on my arrival there found the *Phoongrees* on the point of setting out to a small village in the neighbourhood, with the view of performing the rites of sepulture over a young woman and her child. The former had died pregnant, and as is invariably the custom in such cases, the child had been removed from the womb, that it might be buried separately from its mother. It is further* deemed necessary that a river or creek should intervene between the graves of the parent and child; a precaution that was observed in the present instance. Desirous of witnessing a ceremony that was new to me, I asked leave to accompany the *Phoongrees*: a permission that was readily granted. As we drew near to the house of the deceased, the corpse of the young woman, borne upon a litter adorned with gold and silver leaf, was brought upon the pathway, and preceded by the *Phoongrees*, was taken to the ground appointed for its home. Immediately behind the bier clothed in their white dresses and with shaven crowns, were a group of *Mey-thee-layéng*†; and next to

* It is ordered by *Gautama* that the womb of every woman dying pregnant shall be opened, the child removed and buried apart from its mother; (a river or creek intervening between the graves.) Otherwise the mother will be born again for ten successive times, and be subject to the same misfortune.

† The *Máy-thee-layéng* are an inferior order of nuns wearing white dresses and living in convents of their own. Their discipline is less severe than that imposed upon the *Bhikúnni*, and their knowledge of the doctrines of the Buddhist faith less extensive.

these followed the relatives of the deceased. A poor woman whom I learned was mother to the deceased continued to utter the most bitter lamentations the whole of the way, and did not cease from so doing until the corpse had been borne to the spot prepared for its final reception. When the litter had been placed by the side of the grave, pieces of cloth, with rice and plantains, were laid out as an offering to the *Phraa*; a leathern carpet was spread upon the ground, and on this the senior *Phoongree* seated himself, assuming a look of deep meditation, and partially concealing his face from public view by means of the *yattowing** that he bore in his hand. This done the *Méy-thee-layéng* and relatives of the deceased kneeled upon the ground in two rows (the former kneeling outside), and all made obeisance to the *Phoongree*. Rice was put into their hands, and each individual pronounced the following words in an audible and suppliant tone, receiving from the *Phoongree* replies to the several prayers that were put up.

(Congregation kneeling.) *Ogádhzah†! Ogádhzah!* I once, twice, and three times entreat for thy name's sake, and for the sake of thy holy ministers, that thou wilt forgive me those sins that I have committed in this life; and I also pray that in the future migrations of my soul I may be the first of human beings who shall meet with *Eye-yee-mud-deah‡* (*ariya Maitriya*), and finally attain to *Nibbhan§* with him.

* *Yattowing*, a kind of fan, borne only by the *Phoongrees*.

† *Okása*, Holy Being.

‡ It is the belief of these worshippers of *Gautama* that the age of man was far greater formerly than it is at present; it is now said to be 60 years or more, it will gradually become less, until 10 years will be the average term of existence. This will be followed by an *increase*, so that 1000 years shall be the period of existence allotted to man. When this has occurred, all the images of *Gautama*, and all his sacred writings will be miraculously collected and consumed at the *Bhódeebéng* tree. (The branches of this tree are said to be of gold, and the leaves to resemble emeralds. It is celebrated as the place where *Gautama* first became a *Phraa*, or religious teacher. To ascertain the site of this tree, as well as the locality of kingdoms and cities known at present by other names, was not one of the least important objects of the Burmah mission sent into Hindustan some years ago under charge of the *méywoon Thoowé-dóng-sa-ga-soo*.)

The destruction of the images and writings of *Gautama* will be succeeded by the nativity of the *Phraa Eye-yee-mud-deah*; and all good men then residing upon earth will become his disciples. Occurrences similar to those above described as consequent to the *Nighban* of *Gautama* will mark the departure of *Eye-yee-mud-deah* from the world. *Rámah Phraa* will then appear, and he will declare his successor.

§ *Nibbhan*, *annihilation*, properly. If a man, or woman, is eminently virtuous in this life, he or she, may hope to attain to a *Nibbhan*, *i. e.* not to be born again, but to become as air, smoke, &c. without sense, substance, or shape.

(Phoongree.) You have once, twice and three times entreated of me in prayer, and you may hope that your sins will be forgiven to you; and that you will hereafter meet with *Eye-ye-mud-deah*, and attain to a *Nibbhan*.

C. *Ogadhzah! Ogadhzah!* once, twice, and three times I vow that I will not commit those five mortal sins which are spoken of in the holy writings, and which I am forbidden to commit.

P. You have declared that you will not this day commit those sins. Is that which you have said true?

C. I will do according to that which I have said.

P. Do you believe in the *Phraa Gautama*? do you believe in his holy writings, and do you acknowledge his ministers?

C. All these do I believe and acknowledge.

P. If you do believe in these*, take not the life of any living being this day; neither steal; neither commit adultery; neither bear false witness; and do not make use of intoxicating liquors.

C. All these sins will I carefully avoid.

Gshén Phraa†! Accept of these offerings, I pray thee, and pardon the sins that I have committed in this life; pardon also the sins of the deceased for whom these offerings are also presented; and grant that during this life, or in the future migrations of my soul I may not suffer harm from the five enemies‡ of mankind, If I shall be born again as *man*, let me, I pray thee, be placed in a condition far superior to that enjoyed by my fellow creatures; if as a *spirit*, let me be as *Suh-gyah* (*Sagyá* or *Indra*), in the world of spirits.

Accept of these offerings, I pray thee; they are made not for my good alone, but for the future benefit of my parents and relatives, as well as for my spiritual teachers and the rulers of the land. They are made also for those who suffer torment in *Ngah-yeh§*; for the spirit in the world above and for all living beings. I call *Muth-soon-dyéh||* to witness that these offerings are made not for my individual good alone, but for the benefit of all that have the breath of life.

(Water is here poured upon the ground through one of the pieces of cloth that had been presented to the *Phraa*. The water percolates through the earth, and is supposed to reach the abode of *Muth-soon-*

* These are the five mortal sins.

† Lord! Master! &c.

‡ The five enemies of mankind are, 1, Fire; 2, Water; 3, The Rulers of the Land; 4, Robbers; 5, Wild Beasts.

§ Hell, (q. Purgatory?)

|| *Muth-soon-dyéh* (*Vasundarè*) is the "Recording Angel" who resides in the earth; hears, and marks down every thing that is said.

ဂီဟိသုခရိတိ

ဪကောသဇောကောသကောယကံ၊ ဝဇိကံ၊ မနောကံ၊ သဗ္ဗဒေါသခသိ
 မိသောအပြစ်တို့ကိုလွတ်ပါစေခြင်းငှာ၊ ပဌမဒုတိယတတိယတကြိမ်
 နှစ်ကြိမ်သုခကြိမ်မြောက်အား၊ ဘုရားရတနာတရားရတနာ၊ သဿာရတ
 ကာ ။ ရတနာသုဗ္ဗာတို့ကို ။ အဓိလိကံမိလကိဉ္စန္ဒိဏှိ၊ ရှိခိုးပူဇော်ပူ၊ မြော်က
 တော့ရသောအကြီးအာ ဖြင့်၊ အပယ်လေပါ။ ကပ်သုဗ္ဗာ ။ ရပ္ပည်ရှစ်ပါ၊ ရှစ်
 သုမ္ဘိဠါပါ။ ။ တို့မှကင်ငြိမ်သည်သာဖြစ်၍ ။ နောင်လာလတ္တံ့သော အရိယဂ
 မတ္တေယျဘုရား ။ သွင်ပွင့်တော်မူသောအားကိုတိုင်ကိုကြမ်းလက်ဥစ္စာပူ
 တွေ့၍၊ မတ်တရား၊ ဗိုလ်တရား၊ နိဗ္ဗာန်တရား၊ တော်မြတ်ကို၊ မချွတ်မလွဲအမြဲ
 ဖက်အမှံပူတွေ့ရသည်ကိုပြစ်ရပါလို့၏။ ။ ။ ဤသို့ရှိခိုးပူဇော်ပူမြော်ရသောအ
 ကြိမ်အားဖြင့်အပယ်လေပါ၊ ကပ်သုဗ္ဗာ၊ ရပ္ပည်ရှစ်ပါ၊ ရံသုမ္ဘိဠါတို့မှကင်
 သိမ်သည်သာဖြစ်၍၊ နောင်လာလတ္တံ့သော အရိယဂမတ္တေယျ၊ မြတ်စွာဘုရား၊
 သွင်ပွင့်တော်မူသောအားကိုတိုင်ကိုကြတ်လက်ဥစ္စာ၊ ပူဇော်တွေ့ရ၍၊ မတ်ဖိုခိုဗျာန်
 တရားတော်မြတ်ကို၊ မချွတ်မလွဲအမြဲဖက်၊ အမှံရကြသည်ဖြစ်ကျစေကု။ ။
 ဪကောသဇောကောသအဟံဘန္တတိသရနေဇာသဟပဉ္စသီလံဓမ္မယာစါ
 မိအုဂ္ဂဟံကတ္တာသီလံဒေဝမောဇန္တေ။ ။ ခုတိယံပိအဟံဘန္တတိသရနေ
 သဟပဉ္စသီလံဓမ္မယာစါမိအုဂ္ဂဟံကတ္တာသီလံဒေဝမောဇန္တေ။ ။ တ
 တိယံပိအဟံဘန္တတိသရနေဇာသဟပဉ္စသီလံဓမ္မယာစါမိအုဂ္ဂဟံကတ္တာ
 သီလံဒေဝမောဇန္တေ။ ။ နုမောတသဘဝတောအရဟတောသမ္မာသမ္ဗုဒ္ဓဿ။ ။
 ဗုဒ္ဓံသရဏံဂစ္ဆာမိ၊ ဓမ္မံသရဏံဂစ္ဆာမိ၊ သံဃံသရဏံဂစ္ဆာမိ၊ တိသရဏာဂပနံ
 ပရိပုဏ္ဏံ။ ။ ။ အာမောဇန္တေ။ ။ ပါဏာကိုပါတာဝေရမကရိ၊ အဒိန္နာဒါနာဝေရမရိ၊

ကာမေသုမိစ္ဆာစါရာဝေရမဏိ၊ မသာဝါဒါဝေရမဏိ။ သုရာမေရယမဇ္ဈပ
မာဒဋ္ဌာနာဝေရမဏိ။ ။ တိသရနေနုသဟပဉ္စသိဏံသာဓုကံကဏ္ဍာနပ္ပမာ
ဒေသမ္မာရက္ခိတပုံ။ ။ အာမာဇ္ဇန္တံ။ ။ ဘန္တေ အဂ္ဂင်ဘုရာမယံ။ အကျ
နိဒ္ဓဟ်တို့သည်။ သံသာရဝတ္တဒုက္ခတော၊ သံသရာတည်ဟူသော၊ ဝဇ်ဆင်းရဲအ
ပေါင်းတို့မှ။ မောစနုတ္တယ။ ထွက်မြော်ပါရခြင်းအကြံဉာဏ်၊ တိသရနေကာ၊
သုမ္မာသော။ သရဏာဂုဏ်နှင့်အကွ။ ဒက္ခိနောဒကံ။ အလှူရေဖြတ်ကို။ ပါ
တေတွာသုမိစ္ဆာ။ ဒေမကပါလ္လပူဇော်ပါကံ၏။ ဘန္တေ။ အဂ္ဂင်ဘုရာ။ မ
ယံအကျနိဒ္ဓဟ်တို့သည်။ ကာလင်္ဂတာကံ။ ဘဝဆစ်ဘဝဟောင်းသို့ပြောင်း
သွားလေသောသူကို။ ဝိဒိစ္စရေမှတ်ပြု၍။ ဣမံဝတ္ထံ။ ဤဖင်ပုဆိုးအစရှိသ
ည်တို့ကို။ ဒေမကပါလ္လပူဇော်ပါကံ၏။ ဤသို့အကျနိဒ္ဓဟ်တို့သည်။ ကပါ
လ္လပူဇော်ပါကံသောအကြံအားဖြင့်။ အပယ်လေးပါးကပါသုမိပါးရပ္ပ
ညိဋ္ဌစိပါးရံသုမြို့ငါပါးတို့မှ။ ကင်းလွတ်သည်သာဖြစ်၍။ သုခံလူချမ်းသာ
နတ်ချမ်းသာနိဗ္ဗာန်ချမ်းသာမြတ်ကိုရလိုပါ၏။ ဘန္တေ အဂ္ဂင်ဘုရား။ မယံအကျ
နိဒ္ဓဟ်တို့သည်။ ပြုရသောကောင်းမျှကြောင့်။ မွေးသည်မိခင်မွေသည်ဘဝ
င်။ ဩသ္မာ။ ဘုံကြီးသွားကြီးရေမြေသွင်မှစ၍။ အမျှပေးဝေဗာကံ၏။ အထ
က်ကိုဘဝကံအကံကိုအဝိစိ။ အနန္တစကြာဝါဠာ။ ဘိလာတုပ်ခြင်းအကြွင်းမ
ရှိ။ သုမိဏယံတဘုန်။ ကျင်လည်ကံသောဝေဏယျဒုက္ခိတံ။ သုခိတံ။ သတ္တ
ဝါအပေါင်းတို့ကိုအမျှပေးဝေဗာကံ၏။ ဝသံဗြေဇ္ဈိမြေနှုတ်သားကိုလည်
အမျှပေးဝေပါကံ၏။ ဝသံဗြေဇ္ဈိမြေနှုတ်သားသည်အကျနိဒ္ဓဟ်တို့သည်ကာ
လရှိသည့်အား၍ဘင်မေ့သားသောလည်။ အကျနိဒ္ဓဟ်တို့သည်။ ပြုပါရသောကော
င်မျှကြောင့်ရောင်သာကာလ။ သက်သေခံလျာသည်ဖြစ်စေသော။ ။ ။
အမျှရသည်ဖြစ်စေသော။ အမျှအမျှ။ သာဓုသာဓု။ ။ ပုဒိအာ။ နိဒ္ဓိတံ။ ။

dyéh, who has been invoked to bear witness to the sincerity of the above declaration.)

This done, all arose from the ground; the corpse was taken out of the litter and deposited in the grave. I observed that pawn and spices had been placed in the mouth of the deceased, for the purpose as I was informed of rendering the odour of the body, consequent to decomposition, less offensive to the bystanders. At the sight of the corpse, the poor woman commenced her lamentations afresh, and as my curiosity was satisfied, I returned to the *Soogree's* habitation, leaving the *Phoongrees* to perform over the grave of the child (on the opposite bank), a service in every respect similar to that I have just described.

January 17th.—The *Mugh*s can form no other idea of the distance intervening between one place and another beyond what is derived from the time taken in going over it. In a country like this, abounding with impediments of every description, any other species of measurement was out of the question, so substituting my elephant for a *Perambulator*, and making every allowance for the several obstructions met with, I conceive the distance between *Oogah* and *Singhunneth*e to be as much as 16 miles; from that to *Seppo-towng* 12 miles; and as many more from thence to *Rambree*.

Bidding adieu to the good old *Soogree*, I set out at day-break on my journey to the capital of the island. The *Saaynekyong* creek, after winding through the vale to the right, suddenly takes a turn into the interior, crossing the road within a very short distance of *Seppo-towng*. As the tide was at the flood the elephants were unloaded and swam across; a boat having been placed at the disposal of myself and followers. Proceeding onwards the route was but a repetition of what had been met with on the preceding day. Patches of paddy ground, succeeded by long mountainous ranges with the same abrupt ascent and inclination, were the never failing features of the country passed over between *Singhunneth*e and *Rambree*. The soil on the hills was generally a red clay, containing nodules of chert, and felspar combined with talc. Had I possessed even a common acquaintance with botany, I might have derived much pleasure in the examination of the various vegetable tribes that surrounded me. Unfortunately I was a stranger to the greater number, recognizing only those of most frequent occurrence, such as the *Girjun*, *Tilsah*, *Jharral*, wild *Peepul*, and a host of *Mimosas*. There were also some very pretty creepers, and a vine which corresponds in description with that given me of the black pepper-plant*. After the

* The black pepper-plant is found on the hills in the Sandoway district.

first two or three ranges had been overcome, we approached the village of *Leppang*, the site of an old stockade, and scene of an encounter between the Burmah chief *Némyo-sooyah**, and the Ramoo Rajah *Keembrang*, in which the latter was shamefully defeated. From thence it is but a short distance to *Tseembeeyah* and *Kéhsree*, the latter prettily situated on the plain, and surrounded with clumps of trees. Among the inhabitants of *Kéhsree* are a class of people engaged in the oil manufacture, and who shall receive further notice hereafter. The oil is prepared chiefly from the *Thél*, and the mills are in every respect similar to those used in Bengal. Beyond *Kéhsree* is *Koyandowny*† with the two guardian temples on its summit: and to the right of that, the “*Red Hill*‡” of *Rambree*, almost destitute of verdure, and answering in appearance to that predicated by its name. Tiger traps of a novel construction were very numerous in the ghats leading to the town. *Rambree* has on several occasions been much infested with tigers; they have been known to come into the town shortly after dark, and entering the houses, carry off the inhabitants. Cattle and poultry are even now continually taken away, and it is considered very dangerous to sleep outside upon the *michaun*. To facilitate the description of one of these traps, I have endeavoured to represent by a drawing the several parts of which it is constructed.

A, is a long § pole possessing great strength and elasticity, which is bent and held down by B, a peg connected with C, a good thick cane rope. The peg B, is fixed with great care between the bars D, and E,; the bar D, having been previously fastened to the two posts F, F, which are driven into the ground. That part of the platform marked G, is brought into contact with the bar E, and the peg B. H, is a noose laid upon the platform, and I, a heavy wooden cylinder so nicely attached to the cane rope that the least jirk causes it to fall. The platform is laid upon the path frequented by the tiger, (generally a gap in a fence, or a ravine,) and carefully concealed with grass and leaves. The animal treads upon it and it gives way, disturbing the bar E, and peg B, on which the pole springs up to its natural position, bringing the wooden cylinder with such violence upon the arm of the tiger, (already caught in the noose,) that it is generally broken by the concussion. This cylinder covers that part of the leg that has been entangled in the noose, and is of great use in preventing the

* Afterwards *Meyo-woon* at *Rambree*.

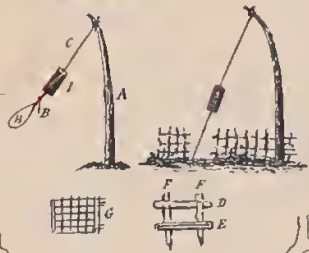
† Called “*St. George's Hill*” by the troops quartered at *Rambree* during the war. The temples were built by the Burmah *Meyowoon Yeh-jutta-gong*.

‡ Already noticed in vol. 2nd (1833), *Journal Asiatic Society*.

§ A large branch of a tree sometimes serves as well.

95° 40' Long. East from Greenwich

Mode of catching Tigers.



Saddle I.

Pigoda Rock 19° 30'

Bay of Bengal

19° N. Lat.

CHEDUBA ISLAND

AMHERST I.

ADAM'S I.

animal from gnawing the rope. The beast hangs suspended in the air at the mercy of the villagers, who dispatch him by means of clubs or bamboos hardened in the fire, and pointed at the end so as to resemble pikes.

Arrived at the highest point of the ascent over *Koyandowng*, the large and pretty town of *Rambree*, surrounded with hills and divided by a creek that is seen in the distance meandering towards the sea, appears spread out to view in the vale below.

(To be continued.)

III.—*Memorandum of an Excursion to the Tea Hills which produce the description of Tea known in Commerce under the designation of Ankoj Tea.* By G. J. GORDON, Esq.

[Communicated by Dr. N. WALLICH, Sec. Com. Tea Culture.]

Having been disappointed in my expectations of being enabled to visit the Bohea hills, I was particularly anxious to have an opportunity of personally inspecting the tea plantations in the black-tea district of the next greatest celebrity, in order to satisfy myself regarding several points relative to the cultivation on which the information afforded by different individuals was imperfect or discordant.

Mr. GUTZLAFF accordingly took considerable pains to ascertain, for me, from the persons who visited the ship, the most eligible place for landing with the view of visiting the Ankoj hills; and Hwuy Taou bay was at length fixed upon as the most safe and convenient, both from its being out of the way of observation of any high Chinese functionaries who might be desirous of thwarting our project, and from its being equally near the tea-hills, as any other part of the coast, at which we could land. As laid down in the map of the Jesuits, there is a small river which falls into the head of this bay, by which we were told we should be able to proceed a good part of our way into the interior. We should of course have preferred proceeding by the Ankoj river, which is represented in the same map as having its source to the west of Ngau-ki-hyen and falling into the river which washes Sueu-chee-foia, were it not for the apprehension of being impeded or altogether intercepted by the public functionaries of that city. In order to make ourselves as independent as possible of assistance from the people, we resolved to dispense with every article of equipment which was not necessary for health and safety. The weather had for some days been comparatively cold, the thermometer falling to 55° at sunrise and not getting higher than 66° during the

day, so that warm clothing not only became agreeable, but could not be dispensed with during the nights; arms for our defence against violence from *any* quarter, formed likewise a part of our equipments, and, trusting to money, and Mr. GUTZLAFF's intimate knowledge of the language and of the people for the rest, we left the ship on the morning of Monday, 10th November, proceeding in the ship's long boat towards the head of the bay, where the town of Hwuy Taou is situated.

The party in the boat consisted of Mr. GUTZLAFF, Mr. RYDER, (second officer of the "Colonel Young,") Mr. NICHOLSON, late quartermaster of the "Water Witch," whom I had engaged for the projected Woo-re journey, and myself, one native servant and eight lascars. The wind being unfavourable, we made rather slow progress by rowing, but taking for our guidance the masts of some of the junks which we observed lying behind a point of land, we pulled to get under it, in order to avoid the strength of the ebb tide, which was now setting against us. In attempting to round the point, however, we grounded, and soon found that it was impossible to get into the river on that side, on account of sand-banks which were merely covered at high water, and that it was necessary to make a considerable circuit seaward to be able to enter. This we accomplished, but not till 1 A. M. At this time a light breeze fortunately springing up, we got on very well for some time, but were again obliged to anchor, at $\frac{1}{4}$ past 2, from want of water. As the tide rose we gradually advanced towards the town of Hwuy Taou, till we came to one of those bridges, of which there are several along the coast, that extend over wide sand-flats that are formed at the mouths of the rivers. These bridges are constructed of stone piers with slabs of stone laid from pier to pier, some extending over a space of 25 feet and upwards, and others being from 15 to 20 feet space. As the length of this bridge cannot be less than three quarters of a mile, the whole is very striking as a work of great labour; if not exhibiting either much skill or beauty. We were informed by some boat people that we should not find water to carry us beyond the bridge, but observing some tall masts on the other side, we resolved on making the experiment and pushing on as far as we could. It was almost dark when we passed under the bridge, and we had not proceeded far when we were again aground. This, however, we attributed to our unacquaintance with the channel, and as the tide floated us off, we continued advancing, notwithstanding the warning of a friendly voice from the bridge that entreated us to return to the town, promising us comfortable quarters, and a guide, &c. Being rather distrustful of the motives for this advice,

however, we proceeded for some time longer, but at length found it impossible to proceed farther, the ebb having at the same time commenced. We therefore spread an awning, and prepared to make ourselves as comfortable as possible for the night. The day had been the warmest we had experienced for a month past, but the night was very cold, and our boats, as may be imagined, far from commodious for so many people. At day-light we found that there was not six inches of water in any part of the channel, and from the boat we stepped at once upon dry sand. The survey from the bank showed us plainly that it would be impossible to proceed any farther by water. We accordingly prepared to march on foot, taking with us three lascars who might relieve each other in carrying our cloak-bag of blankets and great coats, as well as some cold meat. We ordered the people to prepare a meal as fast as possible, intending to make a long stretch at first starting, and Mr. NICHOLSON was directed to remain in charge of the boat with five lascars, to move her down under the bridge on the return of the flood, and there to wait our return for four or five days. Crowds of people now began to crowd round the boat, moved by mere curiosity. Mr. GUTZLAFF induced some of them to get ducks and fowls for the use of the boat's crew, and strange to say prevailed on one man to become our guide, and on two others to undertake to carry our baggage, as soon as we should be a little farther off from the town and out of the way of observation.

After a little, an old gentleman made his appearance on a chair who proved to be the head man of the town: he inquired whence we came and whither we were going, which we freely told him. With these answers he seemed perfectly satisfied, probably from finding them correspond with what he had been already told by some of the people with whom we had communicated on the subject in seeking information and assistance. He measured our boat with his arms, but offered us no obstruction nor even remonstrance. We observed him, however, after he had interrogated us, sending off two or three messengers in different directions, which made us the more anxious to be off. It was however past 9 o'clock before Mr. RYDER had completed his arrangements for the boat's crew, and the sun was already powerful. We were soon joined by our guide and the coolies, and our cavalcade winding along the foot paths, which are the only roads to be met with, made an imposing appearance. Mr. GUTZLAFF and the guide led the way, followed by a lascar with a boarding pike; next came the baggage, attended by a lascar similarly armed. I followed with pistols, and attended by a lascar armed with a cutlass, and Mr. RYDER carrying a fowling piece and pistols brought up the rear. Skirting the town of

Hwuy Taou, we proceeded in a N. N. E. direction at a moderate pace for an hour and a half, when we stopped at a temple, and refreshed ourselves with tea. Nothing could be more kind or more civil than the manners of the people towards us hitherto, and if we could have procured conveyance here so as to have escaped walking in the heat of the day loaded as we were with heavy woollen clothes, we should have had nothing farther to desire; as it was, my feet began already to feel uncomfortable from swelling, and after another hour's marching, I was obliged to propose a halt till the cool of the evening. Fortunately we found, however, that chairs were procurable at the place, and we accordingly engaged them at half dollar each. These were formed in the slightest manner, and carried on bambu poles, having a cross bar at the extremities, which rested on the back of the bearer's neck, apparently a most insecure as well as inconvenient position; but, as the poles were at the same time grasped by the hands, the danger of a false step was lessened. We had not advanced above a mile and a half before the bearers declared they must eat, and to enable them to do so, they must get more money. With this impudent demand we thought it best to comply, giving them an additional real each. After an hour's further progress we were set down at a town near the foot of the first pass which we had to cross. There the bearers clamourously insisted on an additional payment before they would carry us any further. This we resisted, and by Mr. GUTZLAFF's eloquence gained the whole of the villagers who crowded round us, to join in exclaiming against the attempted extortion. Seeing this the rogues submitted and again took us up. Mr. G. mentioned that while we were passing through another village, the people of which begged the bearers to set us down that they might have a look at us, they demanded 100 cash as the condition of compliance. The country through which we passed swarmed with inhabitants, and exhibited the highest degree of cultivation, though it was only in a few spots that we saw any soil which would be deemed in Bengal tolerably good; rice, the sweet potatoes, and sugar-cane were the principal articles of culture. We had now to ascend a barren and rugged mountain, which seemed destined by nature to set the hand of man at defiance; yet, even here there was not a spot where a vegetable would take root, that was not occupied by at least a dwarf pine, planted for the purpose of yielding fire-wood, and a kind of turpentine; and wherever a nook presented an opportunity of gaining a few square yards of level ground by terracing, no labour seems to have been spared to redeem such spots for the purpose of rice cultivation. In ascending the pass we soon came to places where it was difficult for our bearers to find a

footing, and where they had consequently to pick out their steps as they advanced. To assist themselves they gave the chair a swinging motion with which they kept time in raising their feet.

This was far from agreeable, and the first impression felt was that it was done merely to annoy, but we very soon saw that the object was different. The highest point of the pass I should conjecture to be about 1200 feet above the plain, and the descent on the north side to be nearly equal to the ascent from the south, say 1000 feet. At half-past four we arrived at a rather romantic valley, which was to be our halting place for the day. We proposed to the bearers to carry us on another stage next day, but for this they had the impudence to ask five dls. per chair. This of course we would not listen to for a moment, and were afterwards happy that we got rid of such rascals, as good bearers and on moderate terms were procurable at the place. The name of this village is Lung-tze-kio. It seems once to have been a place of greater importance than now, exhibiting marks of dilapidation and decay. Even the foot-path over the pass must have been at one time an object of attention, as we found in several places the remains of a sort of pavement, and of bridges which were now nearly destroyed. The inn at which we stopped afforded as few and mean accommodations as could well be imagined, but we were able to get some fowls deliciously grilled, on which, with the aid of sweet potatoes, and of the salt beef which we brought with us, we made a most hearty repast. Among the people who came to see us at the inn was a very respectable looking young man, a student, who won Mr. GUTZLAFF's heart by asking him for instruction in religion. Unfortunately the whole contents of a box of religious tracts, and other books had been distributed in the morning, and Mr. G. was unable to supply him with any. The request was no doubt prompted by the report of the people who had accompanied us, and who had themselves partaken of Mr. G.'s liberality before they volunteered. This young man strongly recommended to us to alter our course, magnifying the distance of Twa-Bo to which we were bound to 100 *li* or 30 miles, and telling us that at the distance of 40 *li* or 12 miles to the S. W. we should find tea plantations of a very superior description. The exaggeration of the distance led me to suspect the accuracy of the information in other respects, and I had heard enough of contradictory evidence already, not to be swayed by it in the present instance.

Nov. 12th.—Got into our chairs at a quarter past six A. M. and proceeded along a narrow rugged dell to a town called Koe-Bo. Several nice looking hamlets were seen on the way. The people were engaged

in reaping the rice, which seemed heavy and well filled in the ear. In several places I observed that they had taken the pains to tie clumps of rice stalk together for mutual support. Sugar-cane is bound in the same way, and for additional security the outside canes are mutually supported by diagonal leaves, which serve at the same time to form them into a kind of fence. The leaves are not tied up round the stalks as in Bengal; the cane is slender, white, hard, and by no means juicy or rich; yet, bating the black fungus powder, which is very prevalent, their surface is healthy, and close growing in a remarkable degree. We arrived at Koe-Bo at eight o'clock, and finding we could get water conveyance for part of the way on which we were proceeding, we engaged a boat for that purpose. After a hearty breakfast we embarked at 10 A. M. amidst crowds of people who covered the banks of the river at the ghát. On inquiry we found that the river on which we were proceeding in a W. N. W. course, was the same which we passed at Gan-Ke-Luyu, and flowed to Suen-chee-foo. The boat was large, but light, and being flat-bottomed drew very little water. The stream was so shallow that it was only by tracing the deepest part of the channel from side to side of its bed that we were able to advance at all. This was done by poling; in several places the stream was deepened by throwing up little banks of sand so as to confine its course within a channel merely wide enough for the boats to pass through. I estimate the width from bank to bank at 200 yards, and should judge from the height at which sugar is cultivated above the level of the present surface, that the greatest depth in the rainy season does not exceed 10 feet. Being entirely fed by mountain torrents its rise must be often very sudden, but I did not observe any traces of devastation in its course. Its name, Ghan-ke or "peaceful stream," is probably derived from this circumstance; the valley on each side seemed well cultivated, the banks being principally occupied by sugar-cane. At every village the people poured as usual to see us out, vying with each other in marks of civility and kindness. The day, however, becoming very hot, we took shelter from the sun under the roof of the boat, to the disappointment of many who waded through the water to gratify themselves with a sight of the strangers. Coming at last to a high bank close to a populous town, they actually offered the boatman 400 cash if he would bring us to; and on his refusal, the boys began pelting the boat with clods and stones. On this Mr. GUTZLAFF went on deck to remonstrate, and Mr. RYDER to intimidate with his gun. Betwixt both the effect was instantaneous, and the seniors of the crowd apologised for the rude manner in which the boys had attempted to enforce the gratification of their curiosity. We had been in vain all

yesterday and to-day looking out for a glimpse of tea plantations on some of the rugged and black looking hills close in view, though at almost every place where we halted we were assured that such were to be found hard by. At three p. m. we reached a town near the foot of the pass by which we were to reach Taou-ee, the place of our destination. There we proposed selling our gold, which for the sake of lightness I had brought with me in preference to silver, not doubting that I should find little difficulty in exchanging it at its proper relative value whenever required. In this, however, we had been disappointed at our last abode, and we were therefore much vexed at learning from our conductors that the inhabitants of Aou-ee were of such a character that the less we had to do with them and the shorter our stay amongst them the better. Some proof of this we had as we were stepping on shore, being for the first time rudely questioned as to our destination and object, and why we had come armed; our reply to the latter query being, that we had armed ourselves with the resolution of resisting violence should it be offered by robbers or others, we were allowed to pass quietly on. The hill we had now to ascend was more rugged, and in some places more abrupt, than that over which we were first carried; and though we had set out at three o'clock, the sun had set long before we came to the end of our journey. The moon was unfortunately obscured by clouds, so that nothing could be more unpleasant than the unfortunate *hits* our toes were constantly making against stones, and the equally unfortunate *misses* where an unexpected step downwards made us with a sudden jerk throw our weight on one leg. At length we reached a village at the further end of the pass, the inhabitants of which were so kind as to light us on the remainder of our way, by burning bundles of grass, to the eminent danger of setting fire to their rice fields now ripe for the sickle. Arrived at Taou-ee we were hospitably received by the family of our guide, and soon surrounded by wondering visitors.

Mr. GUTZLAFF speedily selected one or two of the most intelligent of them, and obtained from them ready answers to a variety of questions regarding the cultivation of the plant. They informed him that the seed now used for propagating the plant was all produced on the spot, though the original stock of this part of the country was brought from *Wae-eshan*, that it ripened in the 10th or 11th month, and was immediately put into the ground where it was intended to grow, several being put together into one hole, as the greater part was always abortive. That the sprouts appeared in the 3rd month after the seeds were put into the ground, that the hole into which the seeds were thrown are from three to four inches deep, and that as the plants grow the earth

is gathered up a little round their root; that leaves are taken from the plants when they are three years old, and that there are from most plants four pluckings in the year. No manure is used, nor is goodness of soil considered of consequence, neither are the plants *irrigated*. Each shrub may yield about a *Tael* of *dry* tea annually (about the 12th of a pound). A Mow of ground may contain three or four hundred plants. The land tax is 300 cash (720 dols.) per Mow. The cultivation and gathering of the leaves being performed by families without the assistance of hired labourers, no rate of wages can be specified; but as the curing of the leaf is an art that requires some skill, persons are employed for that particular purpose, who are paid at the rate of 1 dl. per pecul of fresh leaf, equal to five dollars per pecul of dry tea. The fire-place used is only temporary, and all the utensils as well as fuel are furnished by the owner of the tea. They stated that the leaves are heated and rolled seven or eight times. The green leaf yields one-fifth of its weight of dry tea. The best tea fetches on the spot 23 dls. per pecul, ($133\frac{1}{2}$ lbs.) and the principal part of the produce is consumed within the province, or exported in baskets to Formosa. That the prevailing winds are north-westerly. The easterly winds are the only winds injurious to the plants. Hoar frost is common during the winter months, and snow falls occasionally, but does not lie long nor to a greater depth than three or four inches. The plant is never injured by excessive cold, and thrives from 10 to 20 years. It is sometimes destroyed by a worm that eats up the pith and converts both stem and branches into tubes, and by a gray lichen which principally attacks very old plants. The period of growth is limited to six or seven years; when the plant has attained its greatest size. The spots where the tea is planted are scattered over great part of the country, but there are no hills appropriated entirely to its culture. No ground in fact is formed into a tea plantation that is fit for any other species of cultivation, except perhaps that of the dwarf pine already alluded to, or the *Camellia Obeifora*. Mr. GUTZLAFF understood them to say that the plant blossoms twice a year, in the eighth moon or September, and again in winter, but that the latter flowering is abortive. In this I apprehend there was some misapprehension, as seed of full size, though not ripe, were proffered to me in considerable quantities early in September, and none were found on the plants which we saw. I suspect that the people meant to say that the seeds take eight months to ripen, which accords with other accounts. We wished much to have spent the following day (the 13th) in prosecuting our inquiries and observations at Tawand and its neighbourhood, but this was rendered impracticable by the state of our finances. We had plenty of gold, but no one could be found who

would purchase it with silver at any price. We therefore resolved on making the most of our time by an early excursion in the morning previous to setting out on our return.

We accordingly got up at day-break, and proceeded to visit the spot where the plants were cultivated. We were much struck with the variety of the appearance of the plants; some of the shrubs scarcely rose to the height of a cubit above the ground, and those were so very bushy that a hand could not be thrust between the branches. They were also very thickly covered with leaves, but these were very small, scarcely above $\frac{3}{4}$ inch in length. In the same bed were other plants with stems four feet in height, far less branchy and with leaves $1\frac{1}{2}$ to 2 inches in length. The produce of great and small was said to be equal. The distance from centre to centre of the plants was about $4\frac{1}{2}$ feet, and the plants seemed to average about two feet in diameter. Though the ground was not terraced, it was formed into beds that were partly levelled. These were perfectly well dressed as in garden cultivation, and each little plantation was surrounded by a low stone fence, and a trench. There was no shade, but the places selected for the cultivation were generally in the bottoms of hills, where there was a good deal of shelter on two sides, and the slope comparatively easy. I should reckon the site of the highest plantations we visited to be about 700 feet above the plain, but those we saw at that height and even less appeared more thriving, probably from having somewhat better soil, though the best is little more than mere sand. I have taken specimens from three or four gardens. Contrary to what we had been told the preceding night, I found that each garden had its little nursery where the plants were growing to the height of four or five inches, as closely set as they could stand; from which I conceive that the tea plant requires absolutely a *free* soil, *not wet* and *not clayey*, but of a texture that will retain moisture; and the best site is one not so low as that at which water is apt to spring from the sides of a hill, nor so high as to be exposed to the violence of stormy weather. There is no use in attempting to cultivate the plant on an easterly exposure, though it is sufficiently hardy to bear almost any degree of dry cold.

By half-past 10 A. M. we set out on our return, in chairs which we were fortunate enough to procure at this village, and reached the banks of the river at Aou-ee a little before one o'clock. In the first part of our way we passed by some more tea plantations on very sterile ground. One in a very bleak situation, with nothing but coarse red sand by way of soil, seemed to be abandoned. Our reception at Aou-ee was much more civil than it had been the preceding

day; the people suggested that we should remain there till a boat could be procured. The day, however, being tolerably cool, we crossed the river, and proceeded on foot along its banks to Kre-bo, where we arrived about four P. M. On the road a man who had seen us endeavouring to sell our gold the day before, told us he believed he could find us a purchaser. Mr. GUTZLAFF accordingly accompanied him to the house of a farmer, who after having agreed to give 18 dollars for 30 dollar's worth of gold, suddenly changed his mind, and said he would only give weight for weight. At Koe-Bo, however, we were more successful, procuring 18 dollars for the same 30 dollar's worth of gold. On the road the villages poured forth their population as we moved along. At one place they were actually overheard by Mr. GUTZLAFF thanking our guides for having conducted us by that road, and proposing to raise a subscription to reward them. At Kre-bo we learned that some petty officers had been inquiring after us, which frightened our guides, and made us desirous to hasten our return. Having procured chairs we pushed on accordingly to Koe-ee, our first resting place, where we arrived about seven P. M., and halted for the night. Next morning, the 14th, we mounted our chairs before day-break, but after going a little way the bearers let us down to wait for day-light, and we took the opportunity of going to look at a Chinese play which was in the course of performance hard by. There were only two actors but several singers, whose music to our barbarian ears was far from enchanting. Crossing the pass we met great numbers of people carrying salt in baskets hung in bangies, as in Bengal, a few with baskets full of the small muscle reared on the mud flats near the place of our landing. After getting into the plain we took a more direct road for Taou than that by which we had left it. The people forsook their work on the fields, and emptied their numerous villages to gaze at us. As the morning was cold I wore a pair of dark worsted gloves, which I found excited a good deal of speculation. The general opinion was, that I was a hairy animal, and that under my clothes my skin was covered with the same sort of fur as my hands. In China gloves are never worn. At length one more sceptical than the rest resolved to examine the *paw*, and his doubt being thus further strengthened, he requested me to turn up the sleeve of my coat. I did so, at the same time pulling off a glove to the admiration of the multitude, who immediately set up a shout of laughter at those who had pronounced the strangers of a race half man and half baboons. We met some officers in chairs attended by soldiers, but they offered us no interruption, not even communicating with us. Our bearers, however, easily prevailed on theirs to exchange burthens, each party being thus enabled to direct

their course to their respective homes. We arrived at Hwuy Taou before noon, and immediately embarked for the ships, which we reached at three P. M. We learned from Mr. NICHOLSON that after our departure, and while the boat was still aground, a number of Mandarins came down, and carried off almost every thing that was on board, but the whole was returned after the boat was floated down below the bridge. As we had no explanation of the matter, we concluded that this proceeding might have been intended for the protection of the property from plunder by the people of the town. We found that one of the seed contractors had despatched a quantity of Bohea seeds, arrived during our absence, with a letter stating expectation of being able to send a further supply and to procure cultivators, who would join the ship in the 11th or 12th month. On the same evening I embarked on the Fairy, and reached Lintin on Monday the 17th November, with my tea seeds, just one week after our landing at Hwuy Taou to explore the Hwuy tea hills. I have been more minute in my details of this little expedition, than may at first sight appear needful, with the view of showing the precise degree and kind of danger and difficulty attending such attempts. Our expectation was, at leaving the ship, that we should reach the head of the bay by nine or 10 o'clock A. M. and attain a considerable distance from Hwuy Taou the same day, and thus have a chance of passing without attracting the notice of any of the Wanfoo or Government officers. Had we waited to ask their permission it would of course have been refused, and we should have been directed in the most authoritative manner to return to the ship. We were not a little alarmed when aground in the morning, lest the old gentleman who measured our boat should have deemed it his duty to intercept our progress; but we took care to go on with preparations for our march, as if nothing of the kind was apprehended. It is this sort of conduct alone that will succeed in China. Any sign of hesitation is fatal. Had we shown any marks of alarm, every one would have kept aloof for fear of being implicated in the danger which we seemed to dread; on the other hand, a confident bearing, and the testimony borne by the manner in which we were armed, that we would not passively allow ourselves to be plundered by authority, inspired the like confidence in all those with whom we had to do; for the rest of the narrative shows that from the people left to themselves we experienced nothing but marks of the utmost kindness and good nature, except indeed, where money was to be got:—there the Chinese, like the people of other countries, were ready enough to take advantage of the ignorance of strangers, though with such a fluent command of the language as Mr. GUTZLAFF possessed he was able to

save us from much fleeing in that way. I need scarcely add, that no good can result from an attempt to penetrate into the interior of China by a party of foreigners, unless some one of them has at least a moderate facility in expressing himself in conversation with the people.

IV.—*Observations on an Article in Loudon's Magazine of Natural History, on the subject of the Albatross. By Lieut. THOMAS HUTTON, 37th Regt. N. I.*

At page 147 of the 32nd Number of Loudon's Magazine of Natural History, a contributor observes :

“COLERIDGE somewhere in his wild and magical ‘Rime of the Antient Mariner,’ says of the Albatross, whom he introduces as a bird of Omen.”

“ At length did cross an Albatross,

Thorough the fog it came ;

As if it had been a Christian soul,

We hail'd it in God's name.

“ It ate the food it ne'er had eat,

And round and round it flew ;

The ice did split with a thunder-fit,

The helmsman steer'd us through.

“ And a good south-wind sprung up behind,

The Albatross did follow,

And every day for food or play,

Came to the mariners' hollo.”

“ Had this Albatross been a sea-gull, the above might have been fact, as well as fancy.”

To which another writer adds, at page 372 of the 34th Number.

“ And not less so, it may be remarked, if it be presumed, that COLERIDGE actually speaks of the Albatross itself. This bird is one of the Laridæ, or gull tribe ; and as our correspondent Mr. MAIN has in person remarked to us, ‘ every voyager round the Cape of Good Hope may have observed it to follow and fly round the passing vessel from day to day.’ He added, ‘ this large bird seems to subsist on any animal matter which floats on the water. In their following of ships they are easily caught by a strong hook baited with a bit of pork or beef.— Their body appears emaciated, being small in proportion to the size of their plumage ; as the wings, when extended, measure 9 or 10 feet from tip to tip. They appear to be very stupid birds, perhaps from being broken-hearted, from the paucity of food they meet with 800 miles from the nearest land.’

“ Dr. ARNOTT, as quoted by Mr. RENNIE, remarks, ‘ How powerful must be the wing muscles of birds which sustain themselves in the sky for many hours ! The great Albatross, with wings extended 14 feet or more, is seen in the stormy solitudes of the southern ocean, accompanying ships for whole days, without ever resting on the waves.’ ”

“ Mr. MAIN, whom apprehension of exceeding the truth always leads to speak within bounds, gives above the spread of the wings at 9 or 10 feet ; Dr. ARNOTT,

as appears by Mr. RENNIE'S quotation, at '14 feet or more;' while the specimen in the Zoological Society's Museum in Bruton Street, and we have seen this specimen, is set down in the Society's catalogue, where a picture of it is given at the following dimensions:—'Length from tip of bill to extremity of tail 3 feet 4 inches, expansion of wings, 9 feet.' The mean of these three statements of the spread of the wings of the Albatross is 10 feet 10 inches*: and although true, without doubt, is the proverb '*medio tutissimus ibis*,' we care less about the precise dimensions, than to show that the expansion is on all hands admitted to be great. This great expansion of wings, and that wonderful provision in the physiology of birds, by which they are enabled to charge and fill every bone in their body with rarified air, to promote and secure as by a series of balloons their buoyancy; and together with the comparative smallness, and therefore lightness of the body, of the Albatross, in part prepare us to give credence to a supposition entertained by some, that this bird sleeps while on the wing, and the great distance from any land at which it is frequently seen towards the close of day farther favours the supposition.

'This power of sleeping in the air has been alluded to by THOMAS MOORE in his beautiful Eastern poem of *Lalla Rookh*, when describing a rocky mountain beetling awfully o'er the sea of Oman, he says:

'While on its peak, that braved the sky,
A ruin'd temple tower'd so high,
That oft the sleeping Albatross,
Struck the wild ruins with her wing,
And from her cloud-rocked slumbering
Started, to find man's dwelling there,
In her own silent fields of air.'

"The Albatross is doubtless spoken of in the following facts, told us by a sailor friend, now dead and gone: 'A very large bird, sometimes alights on the yards of vessels passing the coast of the Cape of Good Hope, and no sooner is it upon the yards, than it is asleep, and while sleeping, is very easily captured. When upon the deck, it cannot soar into the air, on account of the length of its wings. It makes a loud and disagreeable noise when molested. It is called 'the Booby' by the crew.

"The term Booby is, we have since been told, commonly applied by sailors to any long-winged bird, of a whitish colour; although in the above case of the Albatross, the term would seem to express its incautious or booby-like habit of going to sleep within reach of molestation; a habit which those who scout the idea of the bird's sleeping in the air will impute to the desperateness of its necessity."

* I am informed by a gentleman at this station, who came out on the "*William Fairlie*," that an Albatross was shot on the 23rd March, in lat. 26° 57' south, long. 29° 9' west, which was wholly white, with the exception of a few feathers clouded with pale-brown on the wings. It measured 12 feet from tip to tip of the wings. On the 8th April, five more were shot in lat. 37° 18' south, long. 14° 26' east. The flesh was good, and not at all fishy to the taste. It was dry and insipid.

As there are several points in this paper on which the writer seems to be misinformed, and which are rather far-fetched, I have ventured to draw a few strictures on it, and to add an extract from a Journal which I kept during a voyage from England to Calcutta.

First then, speaking of Albatrosses, the writer says, "*They appear to be stupid birds, perhaps from being broken-hearted from the paucity of food, &c. &c.*"

The body of the Albatross, when cleared from the plumage, is certainly very small, and appears out of proportion to the great size of the bird in length and breadth; but, at the same time, though small in size, the two birds which I dissected were extremely plump and fleshy, bearing no signs of a paucity of food, of which there is an abundance, for who that has rounded the Cape has not seen the shoals of flying fish which ever and anon rise from the water as the ship disturbs them in her course. Fish, Mollusca, and Medusæ form the food of the Albatross.

Why then should he break his heart at the thoughts of starvation!!

Again, "*The great Albatross, with wings extended &c. is said to accompany ships for whole days without ever resting on the waves.*"

Here I would remark, that his not *having been seen* to settle, is no proof that he *did not* do so, during these whole days, to say nothing of the intervening nights—inasmuch as, it is very unlikely that he was watched for whole days incessantly by any person, and those who have been to sea, and have paid attention to these birds, must acknowledge that they do not merely "fly round the ship," but extend their flight far away over the boundless deep, and are lost to sight, ever and anon returning to the ship in their restless search for food.

Besides, the Albatross does not feed on the wing, but as far as my experience carries me, invariably settles on the water before taking his prey;—therefore it follows that for "*whole days*" he does not feed. No wonder his heart is broken, and his body emaciated. But surely the writer could never suppose that the almighty and merciful Creator, who has so fully provided for the wants of all his creatures, would neglect to supply the wandering Albatross, and doom it to pine away in misery and a state of half-starvation!

Next comes a supposition, that the bird sleeps on the wing, and that the great distance from land at which it is seen at close of day is thought to favour the supposition; in support of which, a pretty quotation from Moore is brought in, to prove, that "*castles built in air,*" are as likely to break the rest of the wandering Albatross, as of man, his lord and master!

Now the Albatross being a sea-bird, and furnished with webbed feet—what hinders it from sleeping on the waves like other water-fowls?

Is not motion the effect of will? And does not sleep seal up our eyes in forgetfulness? How then can the Albatross continue its flight, when the will to move its pinions, and direct its course, is lost in sleep? The quotation proves the absurdity of the supposition by showing that the bird is “running his head against a wall!” What the wandering Albatross may do near land I cannot say, but at sea I never saw one rise so high even as the yards of the ship, although the Sooty Albatross (*Diomedea fuliginosa*) very frequently did.

With regard to the bird or birds which sailors call a “Booby*,” I can say little, as I never had the good fortune to see one captured; but certainly from its flight and appearance at a distance, I should pronounce it to be a gull or petrel, but decidedly not an Albatross; here, however, I speak at random, and shall be happy to receive correction if necessary. Be it what it may, I cannot understand what “*desperate necessity*” there is for the bird’s sleeping on board of ship, when it has a fine smooth sea to rest on, and a pair of good broad webbed feet, and a thick impenetrable plumage, made for the very purpose of enabling it to rest on the waters; we know that all water-fowl resort to the land occasionally, and the Booby, being some hundreds of miles at sea, may choose to rest on the only solid footing it can find, in order to break the dull monotony of a daily seat on salt-water!

But joking apart, may I not ask, on what did the Booby rest, before ships had made the passage round the Cape? unless they could sleep on the water, their necessities must have been much more desperate than in the present day!

To the trivial names applied by sailors and casual observers, to these birds, I attach no value whatever, as I have seen the folly of trusting to such names; for instance, one of the Albatrosses which I caught on my last voyage to India, was termed by the officers of the ship, “*a Mollymawk*,” and they laughed at the idea of its being an Albatross, merely because in size and plumage it did not agree with the bird which they were accustomed to term an Albatross. Nevertheless, *it is a true Albatross!* Another bird, the Sooty Albatross, was named “*a Peeroo!*”

* On 2nd May, “a Booby” was caught asleep on the rigging of the “*William Fairlie*.” It had the plumage wholly *brown*, and not white, as stated in Loudon. On being seized, it disgorged “five flying fish,” all of good size. Does not this prove that there is no *scarcity of food?*

Sailors, like landmen, who form opinions of the operations of nature, from mere casual and superficial observation, without condescending to look into causes and effects, must of course very often come to erroneous and ridiculous conclusions. Witness the following anecdote which occurred to me :

The boatswain told one of the passengers that the stormy petrels, or Mother Cary's Chickens, make no nest, but lay two white eggs on the water, and then take them under their wings to hatch them ; during this time the male bird supplies the female with food !

This fable is, I believe, current among the lower class of seamen.

On telling this story, however, the *chief officer* laughed very heartily, and cautioned me not to receive as gospel every " yarn the boatswain chose to spin ;" but lo ! in a very few minutes, *he* told me *as truth*, a story which appeared to me fully as marvellous as the other : He said, that in some of the islands to the southward, and about Cape Horn, there is a bird called the " King Penguin," which had a *pouch between its legs*, into which it puts its egg, (for the Penguin only lays one,) as soon as laid ; in this pouch the egg is kept for 24 hours, during which time the female remains on shore, but at the expiration of that time, the male bird, who is also furnished with a similar pouch, returns from his fishing excursions, and relieves the female by receiving the egg into his custody for the next 24 hours. They take a very long time to shift this egg from one pouch to the other, and although there are several species of Penguin on those islands none of them are furnished with a " *patent egg-boiler*," save his majesty the King Penguin of the Southern Isles !!

He added, that the bird may be induced to drop the egg, although reluctantly, by running a stick between its legs !!

Having offered these remarks, I shall proceed in my next, to give you an extract from my Journal, kept on the voyage, in which I noted down every circumstance connected with Natural History, and which being written not from memory, but from facts at the moment occurring, may perhaps be considered worthy of perusal.

Since writing the above, I have had an opportunity of perusing GEIFFITH'S Translation of CUVIER, and find, that the Booby is stated to be the " *Pelecanus Sula*;" the plumage is thus described : " Belly and vent, all white, when young, all brown!" this is rather a meagre description, but nevertheless proves, that the Booby is not an Albatross, as supposed by the writer in Loudon's Nat. Hist.

V.—Roof of the New Iron Foundry at Kásipur near Calcutta.

We have requested Major HUTCHINSON of the Engineers, the architect of this elegant structure, to favour us with drawings of its various details, that we may make known, as far as the circulation of our journal permits, his very successful combination of the cast-iron truss with a wrought-iron tie to roofs of large span in this country. We are so little accustomed to see any thing else in India but the heavy flat roof with its massy timbers groaning under an inordinate load of terrace-work heaped up most disadvantageously in the centre to allow a slope for the water to run off, while the invisible white ant is scooping out the solidity of the timber, and the dry rot is corroding the ends that support the whole on the wall,—that the eye rests with quite a pleasurable sensation on the view of a light, airy frame-work like that before us, composed of materials indestructible, wherein the strains and pressures are counterpoised, the load lightened, the liability to crack and leak lessened, and the repair of every part rendered easy and entirely independent of the rest.

The progress of improvement is notoriously slower in Government operations than in private works. When cast-iron beams were first brought to India on private speculation, and were offered to Government by a mercantile house in this town, they were rejected. The roof of a large private godown was soon after constructed with them, and their efficacy thus proved; then immediately a re-action took place, and a large quantity was indented for by Government. The Hon'ble Court sent them out, and they have remained until now totally unemployed, although numerous public buildings have been erected since they arrived.

It was, we know, a subject of lengthened debate what sort of roof should be given to the foundry. A timber trussed roof had been sanctioned at 15,000 rupees, and we may, perhaps, rather attribute the substitution of the present one to the numerical reduction of the pecuniary estimate, than to any actual conviction of its superiority in other respects, for the beams being already provided, the whole cost of the present roof, exclusive of them, has been only rupees 11,000.

The New Foundry, or rather the room in which the cannon are turned and bored, is a spacious hall, of $169\frac{1}{4}$ feet long by 50 feet clear span in breadth, and 40 feet in height from the floor to the vertex of the roof; entirely open from end to end, lighted by a range of upper windows, and surrounded by a suite of apartments of half elevation. The steam machinery of the several borers and lathes, is arranged along one side of this room, in a compact and exceedingly neat manner. It is impossible

to attempt its description ; those who are fond of mechanical inventions, will be amply gratified by an inspection of the whole, especially by the ingenious contrivance for adjusting the angle of the slide rests and cutters, for the exterior bevil of the gun :—the circular revolving tools for turning the trunnions :—the crane carriage for the guns, &c.

The self-acting principle by which the exterior of the gun is turned, while the interior is bored, so as to save one half of the time, while it ensures perfect concentricity of the outer and inner circles, is, we believe, an invention of Major HURCHINSON'S, who took the opportunity when on furlough, of visiting some of the principal founderies in Europe, and studied to adopt every improvement suggested by their inspection.

The whole apparatus is driven by a small engine of 10 horse power, which also works a circular, and a reciprocating, saw, and a loam-mill for the casting moulds of the foundery.

The superficial area of the hall is 8462 square feet ; to form an idea of this magnitude, it may be mentioned that the noble edifice of the new Town Hall in Birmingham, is said to contain a larger space than any room in Europe, and will accommodate between three and four thousand persons sitting, or ten thousand standing ; that room is 140 feet long, by 65 feet broad, making a superficial area of 9100 feet, which is only 638 feet more than the Kásipur apartment.

The roof consists of 10 trusses, Plate VI. Fig. 1, each composed of a pair of cast-iron beams pitched at an elevation of ~~12~~ $\frac{1}{2}$ feet in the vertex, and tied together at foot by a horizontal chain supported in the centre by a vertical rod suspended from the angle. The truss-frames are 15 feet 4.6 inches apart : they support light cross-beams and rafters of wood, upon which the planking of the roof is nailed. The weight of one truss with its entire load and chain, is equal to about five and half tons, diffused over the two iron beams. 6

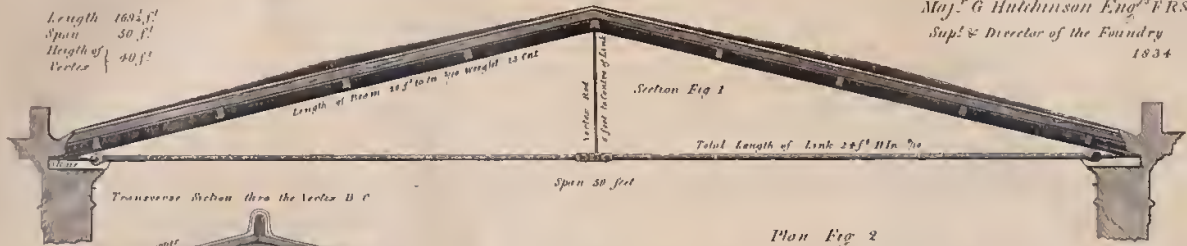
The chain is three inches deep by one inch thick, = 3 inches in section, consequently the applicable force of tension of the chain is $3 \times 9 = 27$ tons, and the ultimate strength of it $3 \times 27 = 81$ tons. The above weight of five and half tons diffused over the two beams, = $2\frac{3}{4}$ tons on each beam, gives according to the sine of the angle of elevation, a tension on the chains of about five and half tons, or only one-fifth the stretching weight, or one-fifteenth of the ultimate strength of the chains.

The iron beams and chains were all proved before they were put up, by suspending for several days without effecting the slightest apparent alteration, a weight of six tons from the vertex, producing a trial tension of about 12 tons, which is more than twice the actual tension.

Plan Section &c of the Large Iron Trussed Roof Constructed over the Boring Room of the New Gun Foundry at Cojipore by

*Maj. G. Hutchinson Eng^r FRS
Sup^t & Director of the Foundry
1834*

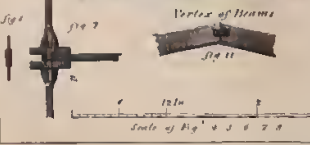
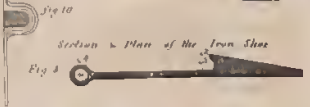
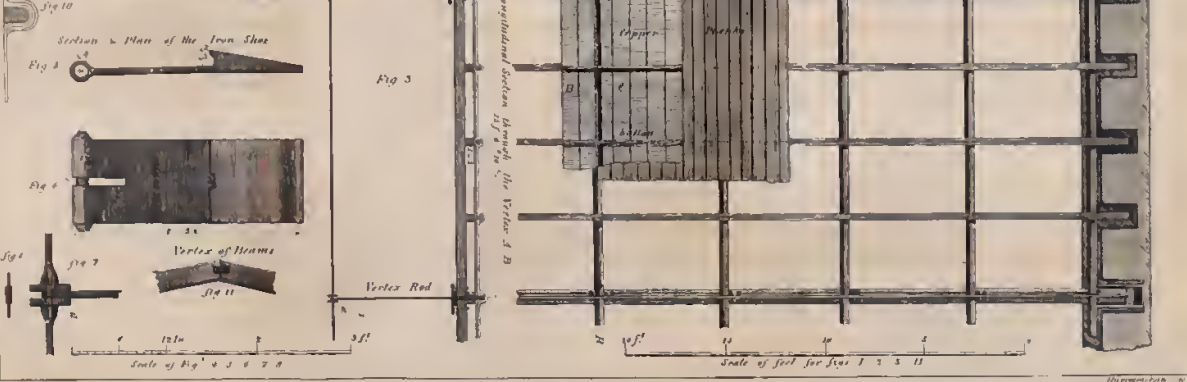
Length 169 1/2 f^t
Span 50 f^t
Height of
Vertex 50 f^t

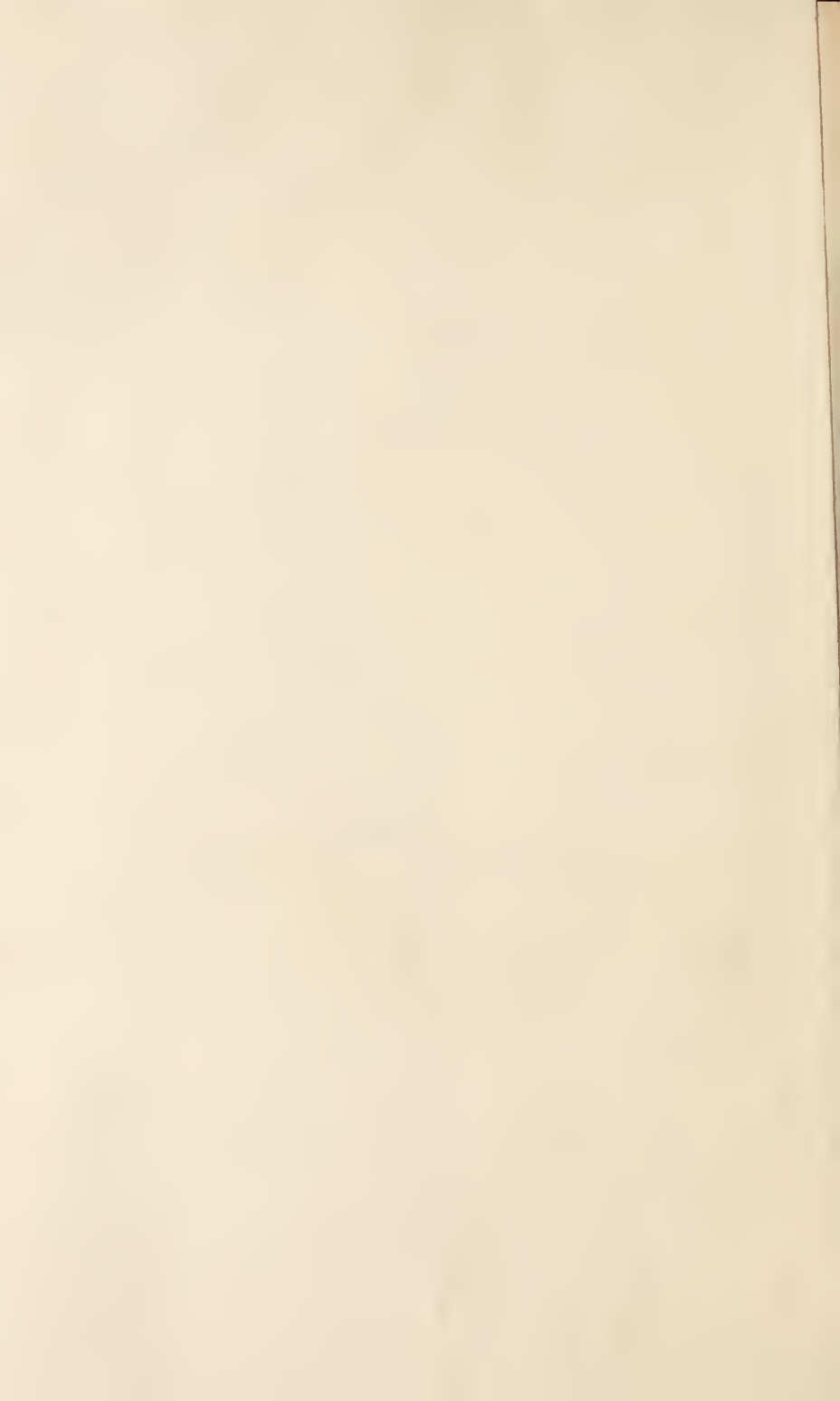


Transverse Section thro the Vertex B C



Plan Fig 2





Each extremity of the tie-rods is bolted to a kind of shoe, (represented in figs. 5 and 6,) resting upon a stone slab on the wall, into which the lower end on the iron beam abuts, (Fig. 1.)

Fig. 2, is a plan of the roof, shewing the disposition of the frame, planking and copper sheathing. In the section, Fig. 3, the longitudinal rod is seen which steadies all the ties from lateral shake.

Fig. 7, (*a*) shews on a larger scale the mode in which the longitudinal tie-rods (*á*) are united by a bolt, (Fig. 8,) having two right-hand screws, passing through the central coupling plates of the chains, and the eye of the suspension vertex rod. This rod being firmly attached by two bolts (*b*) through the beams at the vertex, any derangement whatever of the roof, either vertically or horizontally, is effectually prevented. At each end of the roof the longitudinal rods pass through the walls, to which they are firmly fixed.

Fig. 9, shews the horizontal overlaps of the copper sheathing, which are cemented with white lead, and Fig. 10, the mode in which the copper passes over the wooden battens fixed on the planks, to which only the copper is fastened by copper rivets; a copper cap or ridge-tile lies over the whole length, to prevent the insinuation of water at the fold: it answers this purpose so effectually, that the roof was everywhere found perfectly water-tight, during the late heavy season of rain, the first it had experienced.

The Kásipur roof was set up without the assistance of any scaffolding from below. An experimental truss of timber supported on chains, having been previously made to shew the advantageous application of iron chains instead of tie-beams of timber to roofs of so large a span, it was converted into a platform, moveable upon wheels along the top of the walls, upon which by means of a crane fixed at one end of the frame, the iron beams and every thing else was easily and expeditiously raised and fixed; the beams, &c. for the opposite side of the roof being passed upon wheels across the platform. The whole frame-work was put up in 20 days.

Before closing our short account of the Kásipur roof, we must notice a curious optical deception, for which we are somewhat at a loss for a correct explanation. On entering the room and looking up at the roof, it strikes every beholder that the roof has somewhat sunk, and the horizontal tie-rod is about five or six inches lower in the centre than near the walls. So firmly impressed were we of this being the case, that standing at one end of the room, and holding two flat brass rulers, overlapping one another before the eye, we could readily measure the apparent angle of the tie-rod by raising the ends of the rulers so as to coincide with the two halves of tie-rods. On mounting the

roof and looking in at the upper window of either end, the same effect was still visible, though in a diminished degree, and we were not convinced that it was a deception, until Major HUTCHINSON at our request caused an actual measurement to be made by a perpendicular wooden batten from an accurately adjusted level on the stone floor. It was then proved that there did not exist a difference of level even to the amount of a tenth of an inch. Whence arises the illusion? Is it that the eye, judging of directions by comparison with other objects, and having the numerous lines of the pent roof inclined in opposite directions to each half of the horizontal rods, is thus perplexed in its estimate? the ruler experiment is opposed to such an explanation. It may, perhaps, be owing to the effect of light from the upper windows, which frequently gives a curved appearance to wooden beams from the decrease of illumination from side to centre. If the phenomenon resemble the effect of the eyes in a portrait always looking the same whencesoever viewed, or the curves formed by spokes of a wheel passing a railing, as has been suggested, the effect should admit of a rigid explanation, and we may hope to obtain it from some one of our readers who may have time to investigate this singular deception.

NOTE.—The mode of calculating the strain upon the iron rods in the above account is familiar to engineers, but it may be acceptable to others (for in India every man is his own architect), to be furnished with a correct table of the strength of timbers and iron: the following extract therefore from Mr. BARLOW'S report on the subject to the British Association in 1833, may be acceptable. He prefaces it by a precis of the various opinions and theories hitherto formed to explain the strain and process of fracture, and strongly recommends TREGGOLD'S Treatises on Iron and on Carpentry. There is now no longer any disagreement on the leading principles connected with the strength of materials, excepting such as arise from the imperfect nature of the materials themselves, which furnish different results even in the hand of the same experimenter.

Formule relating to the ultimate Strength of Materials in cases of Transverse Strain.

Let l , b , d , denote the length, breadth and depth in inches in any beam, w the experimental breaking weight in pounds, then will $\frac{l w}{b d} = S$ be a constant

quantity for the same material, and for the same manner of applying the straining force; but this constant is different in different modes of application. Or, making S constant in all cases for the same material, the above expression must be prefixed by a co-efficient, according to the mode of fixing and straining.

1. When the beam is fixed at one end, and loaded at the other,

$$\frac{l w}{b d^2} = S.$$

2. When fixed the same, but uniformly loaded,

$$\frac{1}{2} \frac{l w}{b d^2} = S.$$

3. When supported at both ends, and loaded in the middle,

$$\frac{1}{4} \times \frac{l w}{b d^2} = S.$$

4. Supported the same, and uniformly loaded,

$$\frac{1}{8} \times \frac{l w}{b d^3} = S.$$

5. Fixed at both ends, and loaded in the middle,

$$\frac{1}{6} \times \frac{l w}{b d^2} = S.$$

6. Fixed the same, but uniformly loaded,

$$\frac{1}{12} \times \frac{l w}{b d^2} = S.$$

7. Supported at the ends, and loaded at a point not in the middle, n m being the division of the beam at the point of application,

$$\frac{n m}{l^2} \times \frac{l w}{b d^2} = S.$$

Some authors state the co-efficients for cases 5 and 6 as $\frac{1}{8}$ and $\frac{1}{12}$ but both theory and practice have shown these numbers to be erroneous.

By means of these formulæ, and the value of S , given in the following table, the strength of any given beam, or the beam requisite to bear a given load, may be computed. This column, however, it must be remembered, gives the ultimate strength, and not more than one-third of this ought to be depended upon for any permanent construction.

Formulæ relating to the deflection of beams in cases of Transverse Strains.

Retaining the same notation, but representing the constant by E , and the deflection in inches by δ , we shall have,

Case 1.	$\frac{32}{1} \times \frac{l^3 w}{b d^3 \delta} = E.$	Case 4.	$\frac{5}{8} \times \frac{l^3 w}{b d^3 \delta} = E.$
2.	$\frac{12}{1} \times \frac{l^3 w}{b d^3 \delta} = E.$	5.	$\frac{2}{3} \times \frac{l^3 w}{b d^3 \delta} = E.$
3.	$\frac{1}{1} \times \frac{l^3 w}{b d^3 \delta} = E.$	6.	$\frac{5}{12} \times \frac{l^3 w}{b d^3 \delta} \times E.$

Hence again, from the column marked E in the following table, the deflection a given load will produce in any case may be computed; or, the deflection being fixed, the dimensions of the beam may be found. Some authors, instead of this

measure of elasticity, deduce it immediately from the formula $\frac{l^3 w}{3b d^2 \delta} = E$,

substituting for w the height in inches of a column of the material, having the section of the beam for its base, which is equal to the weight w , and this is then denominated the modulus of elasticity. It is useful in showing the relation between the weight and elasticity of different materials, and is accordingly introduced into most of the printed tables.

The above formulæ embrace all those cases most commonly employed in practice. There are, of course, other strains connected with this inquiry, as in the case of torsion in the axles and shafts of wheels, mills, &c. the tension of bars

in suspension bridges, and those arising from internal pressure in cylinders, as in guns, water-pipes, hydraulic presses, &c. but these fall rather under the head of the resolution of forces than that of direct strength. It may just be observed, that the equation due to the latter strain is

$$t(c-n) = nR.$$

where t is the thickness of metal in inches, c the cohesive power in pounds of a square inch rod of the given materials, n the pressure on a square inch of the fluid in pounds, and R the interior radius of the cylinder in inches. Our column marked C will apply to this case, but here again not more than one-third the tabular value can be depended upon in practice.

Table of the Mean Strength and Elasticity of various Materials, from the most accurate experiments.

Names of Materials.	Specific gravity.	C Mean strength of cohesion on an inch section, lbs.	S. = $\frac{lw}{4bd}$	
			Constants for transverse strain.	E. = $\frac{Ew}{bd}$
WOODS.				
Ash, English,.....	760	17000	2026	6580000
Beech, ditto,	700	11500	1560	5417000
Birch, ditto,	700	1900	6570000
Deal, Christina,.....	680	11000	1550	6350000
Elm, English,.....	540	5780	1030	2803000
Fir, Riga,	750	12600	1130	5314000
Larch, Scotch,	540	7000	1120	4200000
Oak, variable, { from	700	9000	1200	3490000
{ to	900	15000	2260	7000000
Poon, E. Indian, ..	600	14000	2200	6760000
Pine, pitch,.....	660	10500	1630	5000000
Satin wood, B... ..	1020	10866	2403	6929108
Saul, E. Indies, B.	894	16351	2290	8748000
Sisoo, ditto, B.	1032	18500	2548	7922716
Teak, ditto,	750	15000	2460	9660000
Ditto, ditto, B.	729	21957	1447	6665142
IRON.				
Cast iron, { from	7200	16300	8100	69120000
{ to	36000		
Malleable iron,	7760	60000	9000	91440000
Iron wire,	80000

[Those marked B are extracted from Captain BAKER's list in the 8th volume of the Asiatic Researches, which contains a very full and valuable list of the strength of Indian woods.—ED.]

VI.—Miscellaneous.

1.—Desiderata and Recommendations of the British Association for the Promotion of Science.

In addition to the list of desiderata promulgated by the Association, on its first meeting, which we re-published in the first volume of this Journal, page 308, the "Third Report," for 1833, contains several new suggestions and inquiries, whence we hasten to extract such items as it may come within the power of Indian scientific men to elucidate.

In matters of scientific announcement, we are glad to perceive, that the English Government has undertaken the expense of reducing the observations of BRADLEY, MASKELINE, and POND, on the sun, moon, and planets, at the suggestion

of the Association. Also, that Colonel SYKES has been requested to prepare for publication his valuable statistical returns relative to the four collectorates of the Deccan, subject to the Bombay Government; while Professor JONES is to “*endeavour to obtain permission to examine the statistical records understood to exist in great number in the archives of the India House, and to prepare an account of the nature and extent of them.*” Thus there may be some chance of the Reports of Dr. BUCHANAN seeing the light through this unexpected channel, although the Government of India has itself declined permitting the continuance of their publication on the nearly gratuitous terms proposed and acted on by Captain HERBERT for the Dinajpúr volume*!

DESIDERATA CAPABLE OF ILLUSTRATION IN INDIA.

Meteorology.

1. Experimental data for the theory of refraction.

What is the law of the decrease of temperature, or of density, in ascending? How does this vary at different times?

Can any means be contrived for indicating practically at different times the modulus of variation?

Does the refractive power of air depend simply on its density, without regard to its temperature?

Is it well established that the effects of moisture are almost insensible?

Can any rule be given for estimating the effect of the difference of refraction in different azimuths, according to the form of the ground?

When the atmospheric dispersion is considerable, what part of the spectrum is it best that astronomers should agree to observe?

2. That the Committee in India be requested to institute such observations as may throw light on the horary oscillations of the barometer near the equator.

3. That the Committee in India be requested to institute a series of observations of the thermometer during every hour of the day and night.

4. That the decrease of temperature at increasing heights in the atmosphere should be investigated by continued observations at stated hours and known heights. The hours of $9\frac{1}{4}$ A. M. and $8\frac{1}{2}$ P. M., as giving nearly the mean temperature of the year, are suggested for the purpose.

5. That persons travelling on mountains, or ascending in balloons, should observe the state of the thermometer, and of the dew-point hygrometer, below, in, and above the clouds, and determine how the different kinds of clouds differ in these respects.

6. That the temperature of springs should be observed at different heights above the mean level of the sea, and at different depths below the surface of the earth, and compared with the mean temperature of the air and the ground. Detached observations on this subject will be useful, but a continued and regular series of results for each locality will be more valuable.

7. That series of comparative experiments should be made on the temperature of the dew point, and the indications of the wet-bulb hygrometer, and that the theory of this instrument should be further investigated.

8. Observations on the horary oscillations of the barometer, at considerable heights above the sea. This more particularly applies to places near the equator.

9. Observations on the phenomena of wind at two stations, at considerably different elevations. The direction of the wind should be noted in *degrees*, beginning from the south, and proceeding by the west.

Magnetism.

10. That observations should be made in various places with the dipping-needle, in order to reduce the horizontal to the true magnetic intensity.

11. A regular series of observations conducted in this country on the diurnal variation of the needle.

Geology.

12. That measurements should be made, and the necessary data procured, to determine the question of the permanence or change of the relative level of sea and land on the coasts of Great Britain and Ireland, (or other parts of the world.) The measurements to be so executed as to furnish the means of reference in future times, not only as to the relative levels of the land and sea, but also as to waste or extension of the land.

* See Preface to the second volume of the Journal Asiatic Society.

13. That the history of ancient vegetation should be further examined, by prosecuting the researches into the anatomy of fossil wood, which have been exemplified in Mr. WIRHAM'S recent volume.

14. That the quantity of mud and silt contained in the water of the principal rivers should be ascertained, distinguishing as far as may be possible, the comparative quantity of sediment from the water at different depths, in different parts of the current, and at different distances from the mouth of the river; distinguishing also any differences in the quality of the sediment, and estimating it at different periods of the year; with a view of explaining the hollowing of valleys, and the formation of strata at the mouths of rivers.

15. That the experiments of the late Mr. GREGORY WATT, on the fusion and slow cooling of large masses of stony substances, should be repeated and extended by those who, from proximity to large furnaces, have an opportunity of trying such experiments on a large scale; and that trial should be made of the effect of long-continued high temperature on rocks containing petrifications, in defacing or modifying the traces of organic structure, and of the effect of the continued action of steam or of water at a high temperature, in dissolving or altering minerals of difficult solution.

16. That the dimensions of the bones of extinct animals should be expressed numerically in tables, so as to show the exact relations of their dimensions to those of animals now living; and also to show what combinations of dimensions in the same animal no longer exist.

17. That the following geological queries be proposed:

1. Are any instances of contorted rocks interposed between strata not contorted?

2. Is there any instance of secondary rocks being altered in texture or quality by contact with gneiss or primary slates?

3. Is the occurrence of cannel coal generally connected with faults or dislocations of the strata?

4. What is the nature of the pebbles in the new red sandstone conglomerate in different districts: do they ever consist of granite gneiss, mica-slate, chert, millstone, grit, or any other sandstone which can be traced to the coal series?

18. The attention of residents in our remote foreign dependencies is invited to the two great questions of comparative geology and palæontology. 1. Is there or is there not such a general uniformity of type in the series of rock-formations in distant countries, that we must conceive them to have resulted from general causes of almost universal prevalence at the same geological æra? 2. Are the organic remains of the same geological period specifically similar in very remote districts, and especially under climates actually different; or are they grouped together within narrower boundaries, and under restrictions as to geographical habitats analogous to those which prevail in the actual system of things?

19. An examination of the geological structure of the countries constituting the great basin of the Indus, where, if in any part of India, it is supposed a complete series of secondary strata may be expected.

Zoology.

The Committee recommended to the consideration of Zoologists the following subjects of inquiry:

20. The use of horns in the class mammalia; the reason of their presence in the females of some, and their absence in those of other species; the connexion between their development and sexual periods; the reason of their being deciduous in some tribes, and persistent in others.

21. The use of the lachrymal sinus in certain families of the ruminantia.

22. The conditions which regulate the geographical distribution of mammalia.

23. The changes of colour of hair, feathers, and other external parts of animals; how these changes are effected in parts usually considered by anatomists as extra-vascular.

24. The nature and use of the secretions of certain glands immediately under the skin, above the eyes, and over the nostrils, in certain species of the grallatores and natatores; the nature and use of the secretion of the uropygial gland.

25. How long and in what manner can the impregnated ova of fishes be preserved, for transportation, without preventing vivification when the spawn is returned to water.

26. Further observations on the proposed metamorphosis of decapod crustacea, with reference to the views of THOMPSON and RATHKE.

27. Further observations on the situation of the sexual organs in male spiders, and on their supposed connexion with the palpi.

28. The use of the antennæ in insects. Are they organs of hearing, of smell, or of a peculiar sensation?

29. The function of the femoral pores in lizards, and the degree of importance due to them, as offering characters for classification.

Botany.

30. An accurate account of the manner in which the woody fibre of plants is formed.

31. An investigation of the comparative anatomy of flowerless plants, with a view to discover in them the analogy and origin of their organic structure.

32. The cause of the various colours of plants.

33. The nature of the fæcal excretions of cultivated plants, and of common weeds; the degree in which those excretions are poisonous to the plants that yield them or to others; the most ready means of decomposing such excretions by manures or other means.

Tides. (See Journal Asiatic Society, vol. II. page 151.)

Falling stars. M. QUETELET'S mode of observing and recording the characteristic circumstances of these meteors is recommended to notice. "I take my station out of doors, in a situation which commands a good view of the sky, with a map of the heavens spread out before me. When a falling star appears, I mark on the map the point of its commencement, the line of its course among the nearest stars, and the point where it vanished. This is done by an *arrow-line*. A number of reference is added, which connects it with a book-register of the exact time, magnitude, duration, and other circumstances. Contemporaneous observations at distant stations are much desired.

2.—*Manilla Indigo, (so called.)*

There has lately appeared in the Calcutta market an article purporting to be Indigo from Manilla. The packages containing it are to all appearance Chinese, being covered with mats and tied round with split ratans like tea-boxes. A sample of this having been sent me in August last, for comparison of quality with other Indigo, I caused a portion to be incinerated, and found the ash highly ferruginous, and weighing 52 per cent. of the whole,—18 being the greatest percentage I had ever found, and that only in refuse Indigo. The specific gravity was 1.6. Some of the ash dissolved in muriatic acid afforded a copious precipitate to Mur. Barytes, and to Prussiate of Potash. I therefore imagined that the Indigo had been precipitated from the vat with a ferruginous alum, and proceeded no further with its examination.

Having been however recently favoured with another sample from Mr. C. K. ROBISON, under a suspicion that the substance was not Indigo but *Prussian Blue*, I submitted a portion to tests which at once proved the truth of this supposition. By digestion in caustic alkali, hydrocyanic acid may be taken up while the oxyde of iron remains behind; on acidifying the solution and adding to it a drop or two of sulphate of iron, the Prussian Blue is again formed. The readiest test, however, is to place a small portion of the suspected matter on a hot coal or iron. If it be indigo, a fine purple smoke instantly rises, and it takes fire. The Prussiate gives off water, and at last burns feebly. It is also much heavier than indigo, but its colour, in the cake, is a fine clear blue, rather of a coppery streak.

It is reported that the article in question was manufactured in America, and shipped to France, where Indigo was selling at 14 francs. Being unsaleable, it was re-shipped to America, whence it found its way to Canton, where it underwent some change, and was brought to Calcutta, and remains to spread alarm among our manufacturers of Indigo, at the prospect of a fair competition in the blue market they have so long monopolized.—Ed.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of February, 1835.

Day of the Month.	Observations at 10 A. M.					Observations at 4 P. M.					Register Thermometer Extremes.		Rain, inches.	Wind.		Weather.			
	Standard Barometer at 32°.	Wet Baro. meter, do.	Aq. Ten. deducd.	Ther. in air.	Diff. or M. Lesses's dif.	Hair Hygrom.	Standard Bar. at 32°.	Wet Bar. at do.	Aqs. Ten. deducd.	Thermometer in air.	Different.	Lessee's dif.		Hair Hygrometer.	Cold on roof.	Heat in sun.	Morning.	4 P. M.	10 A. M.
1	30.925	.344	.632	69.1	1.61	11.7	71.973	.200	.773	71.5	14.3	68	48.5	105.2	clear.	nw.	sw.	clear.	clear.
2	.935	.360	.675	69.0	10.5	10.0	70.584	.151	.963	72.1	13.3	75	55.0	100.4	do	nw.	w.	do	do
3	.943	.382	.661	69.3	7.7	7.5	69.434	.164	.750	71.2	13.1	81	51.2	102.5	do	w.	nw.	do	do
4	.942	.322	.730	67.9	6.3	7.7	68.586	.120	.816	73.3	11.4	78	57.0	103.2	do	nw.	nw.	do	do
5	.932	.322	.730	67.9	5.9	5.7	69.000	.136	.824	73.9	6.1	79	54.2	106.1	do	w.	w.	do	do
6	.956	.290	.776	71.4	4.5	4.8	66.066	.108	.852	74.3	7.7	84	85	54.4	do	n.	S.W.	do	do
7	.960	.316	.774	71.5	4.3	4.3	67.064	.126	.838	74.1	7.8	7.0	91	58.7	do	n.	n.	do	do
8	.954	.307	.685	69.2	6.0	5.8	69.978	.205	.869	70.9	8.1	7.3	85	52.8	do	n.	n.	do	do
9	.954	.337	.704	69.3	6.2	5.7	69.186	.166	.760	72.4	9.8	9.6	82	51.4	do	n.	n.	do	do
10	.949	.349	.689	70.3	7.1	6.8	69.923	.108	.815	73.3	10.5	10.6	78	54.2	do	n.	n.	do	do
11	.942	.298	.724	71.0	5.9	5.6	69.894	.089	.845	74.9	9.6	10.2	80	54.2	do	n.	S.W.	do	do
12	.946	.290	.745	71.4	8.7	8.4	68.889	.080	.819	75.1	11.7	12.4	75	56.1	do	n.	n.	do	do
13	.916	.224	.792	72.7	7.4	7.6	68.330	.049	.781	76.0	9.2	10.6	80	54.2	do	n.	sw.	do	do
14	.916	.224	.792	72.7	4.2	5.0	68.868	.040	.869	76.9	9.2	10.7	81	55.2	do	o.	sw.	do	do
15	.910	.170	.900	73.7	3.6	4.0	69.319	.070	.879	77.0	8.1	10.0	83	58.7	do	os.	sw.	do	do
16	.956	.140	.810	73.9	2.7	3.3	69.950	.050	.930	77.3	7.2	9.3	84	60.1	do	os.	w.	do	do
17	.973	.140	.903	75.0	4.5	5.7	69.664	.050	.914	77.3	9.3	9.8	81	63.2	do	n.	n.	do	do
18	.969	.157	.903	75.0	6.1	6.5	69.372	.080	.892	77.7	7.8	7.7	88	61.2	do	n.	sw.	do	do
19	.923	.121	.809	65.8	6.8	6.4	69.914	.094	.794	79.9	11.0	11.4	81	64.2	do	o.	S.W.	do	do
20	.918	.121	.809	65.8	4.5	4.5	69.344	.064	.915	80.3	10.7	10.9	82	60.3	do	o.	S.W.	do	do
21	.969	.065	.906	77.0	3.5	3.7	69.308	.068	.923	80.4	9.9	10.5	82	67.1	do	o.	S.W.	do	do
22	.921	.006	.910	77.7	3.3	3.7	69.777	.060	.967	81.1	7.8	7.2	90	67.0	do	o.	S.W.	do	do
23	.923	.006	.910	77.7	4.0	4.3	69.756	.065	.963	82.9	9.4	9.7	85	65.5	do	o.	S.W.	do	do
24	.929	.001	.941	78.0	4.0	4.0	69.608	.065	.963	83.9	9.4	10.4	87	67.2	do	o.	S.W.	do	do
25	.790	.040	.950	96.5	4.6	5.0	65.640	.060	.960	89.0	11.4	11.4	79	69.0	do	o.	S.W.	do	do
26	.764	.072	.792	79.2	5.3	5.4	65.760	.060	.960	89.0	11.4	11.4	79	69.0	do	o.	S.W.	do	do
27	.881	.060	.919	73.5	12.1	12.4	70.820	.026	.984	73.5	16.1	16.3	60	61.7	do	o.	sw.	do	do
28	.923	.065	.961	73.9	6.9	7.3	69.786	.037	.989	80.2	16.1	16.6	64	56.0	do	o.	sw.	do	do
N. mean.	29.988	.172	.816	74.3	6.0	6.2	69.876	.075	.902	76.6	10.2	10.0	70.5	68.5	change of monsoon.				fine weather.

The instruments the same and situated as usual.

*The Radha Pillar
in Zilla Sarun.*



*The Bakhra Pillar
in Tichut.*



The Mound and Dehqope at Kesariah in Tichut



Ancient Funeral Vases from the neighbourhood of Hyderabad.



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